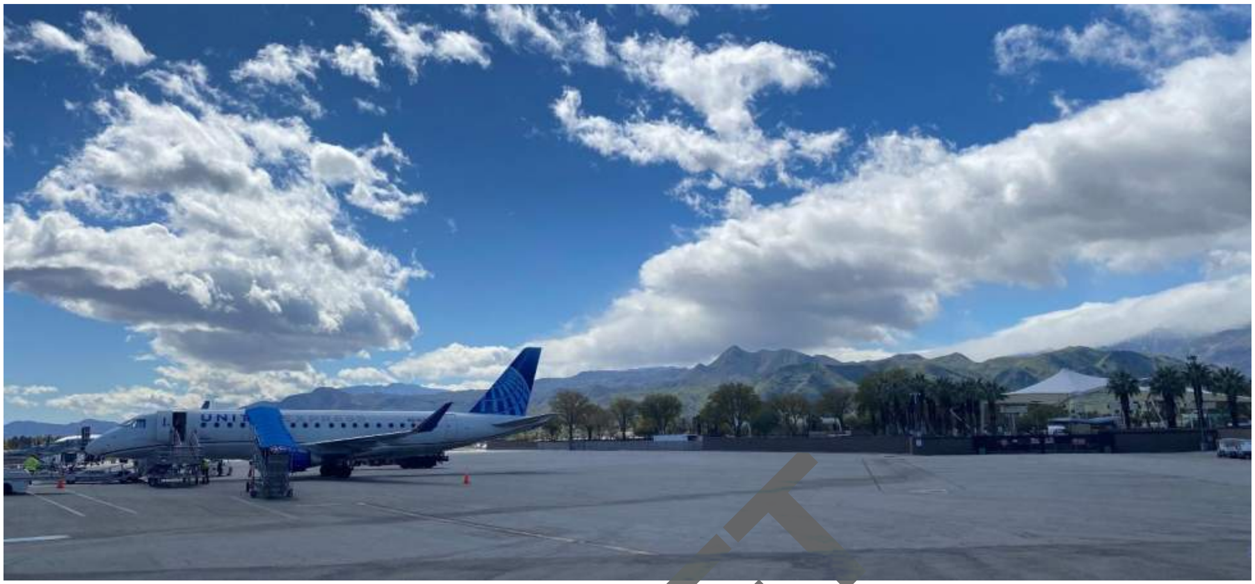
Chapter 1 – Inventory of Existing Conditions



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PROLOGUE

This Comprehensive Airport Master Plan began in the spring of 2023. Throughout the course of 2023 and early 2024, the planning team worked with Palm Springs International Airport (PSP or the Airport) staff as well as the Palm Springs community and airport stakeholders to develop a 20-year plan that would meet the needs for PSP. In May of 2024, the planning team presented the recommendations from this Comprehensive Airport Master Plan to City Council. City Council approved all recommendations apart from the location of the consolidated rental car center. City Council requested the planning team complete additional analysis on the consolidated rental car center. This was done through the following two amendments:

- Amendment 1: This amendment considered an on-airport property versus an off-airport property alternatives for the consolidated rental car center which can be found in Appendix C. This amendment also considered public transportation connectivity analysis that can be found in Appendix D.
- Amendment 2: This amendment considered the height of the consolidated rental car center and traffic impacts to the alternative locations for the consolidated rental car center that can be found in Appendix E. This amendment also includes additional stakeholder outreach that can be found in Appendix F.

OVERVIEW

Palm Springs International Airport (PSP or the Airport) is a publicly owned airport located in Riverside County, California, two miles east of downtown Palm Springs, and within Colorado Desert's Coachella Valley. **Figure 1-1** and **Figure 1-2** show PSP's location and vicinity maps.

The Airport accommodates commercial service passenger aircraft, corporate business jets, military aircraft, and general aviation aircraft. The Airport attracts a wide variety of travel to the region that supports the local economy, primarily leisure travelers who want to unwind in a desert oasis. PSP has experienced significant aviation activity growth in recent years. The Airport enplaned approximately 1.5 million passengers in 2022 – essentially a 50 percent increase in enplanements over the last five years.

The Airport, along with its aviation-related businesses and facilities, represents a vital and significant economic asset. PSP provides benefits to local businesses and industries, supports tourism, and encourages additional business development and expansion throughout the Coachella Valley.

The most recent Comprehensive Airport Master Plan for PSP was approved in 2015. Since that time, there have been several changes that necessitate revisiting the recommendations identified in that plan, including significant increases in the number of annual and peak period passengers, changes to the commercial aircraft fleet, new routes, new air carriers, and changes to airport facilities. This Comprehensive Airport Master Plan focuses on the Airport's terminal area first; therefore, the terminal area facility requirements and alternatives chapters are presented in this document first. The Plan incorporates the remaining airside and landside components in a second phase and those components are presented in the chapters succeeding the terminal area alternatives.

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Airport Ownership and Operation

The City of Palm Springs owns PSP. City of Palm Springs staff manages PSP under the direction of the City Manager. The Airport Commission serves PSP as an advisory body to City Council and consists of 19 members appointed by City Council:

- Ten members reside in and represent the City of Palm Springs.
- Eight members reside in and represent the eight Coachella Valley cities.
- One member represents Riverside County.

Figure 1-1: Airport Location Map

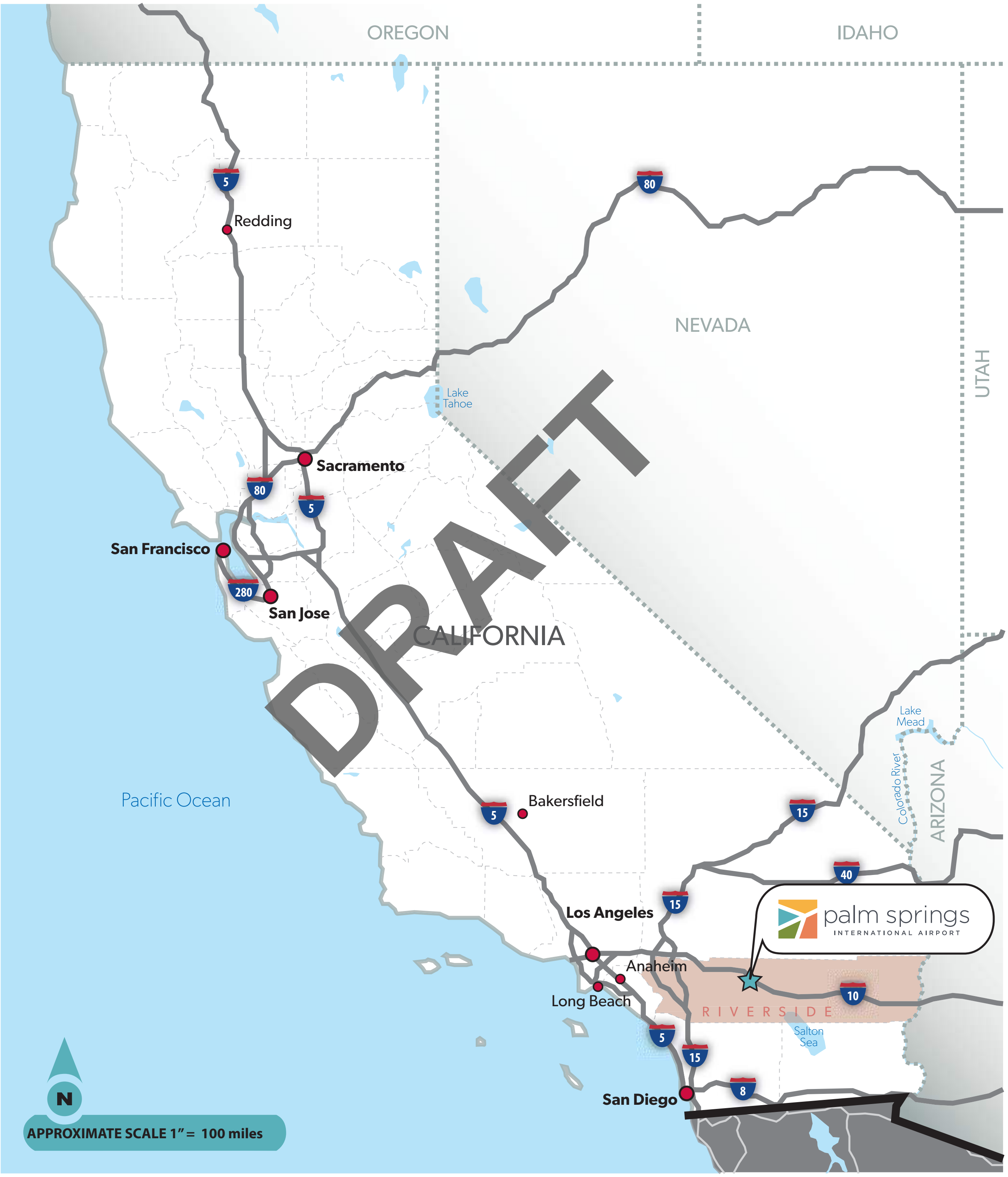
OREGON
IDAHO
NEVADA
UTAH
ARIZONA
CALIFORNIA
Pacific Ocean
Lake Tahoe
Lake Mead
Colorado River
Salton Sea
RIVERSIDE
Redding
Sacramento
San Francisco
San Jose
Bakersfield
Los Angeles
Anaheim
Long Beach
San Diego
5
80
280
15
40
10
8
palm springs
INTERNATIONAL AIRPORT
N
APPROXIMATE SCALE 1" = 100 miles

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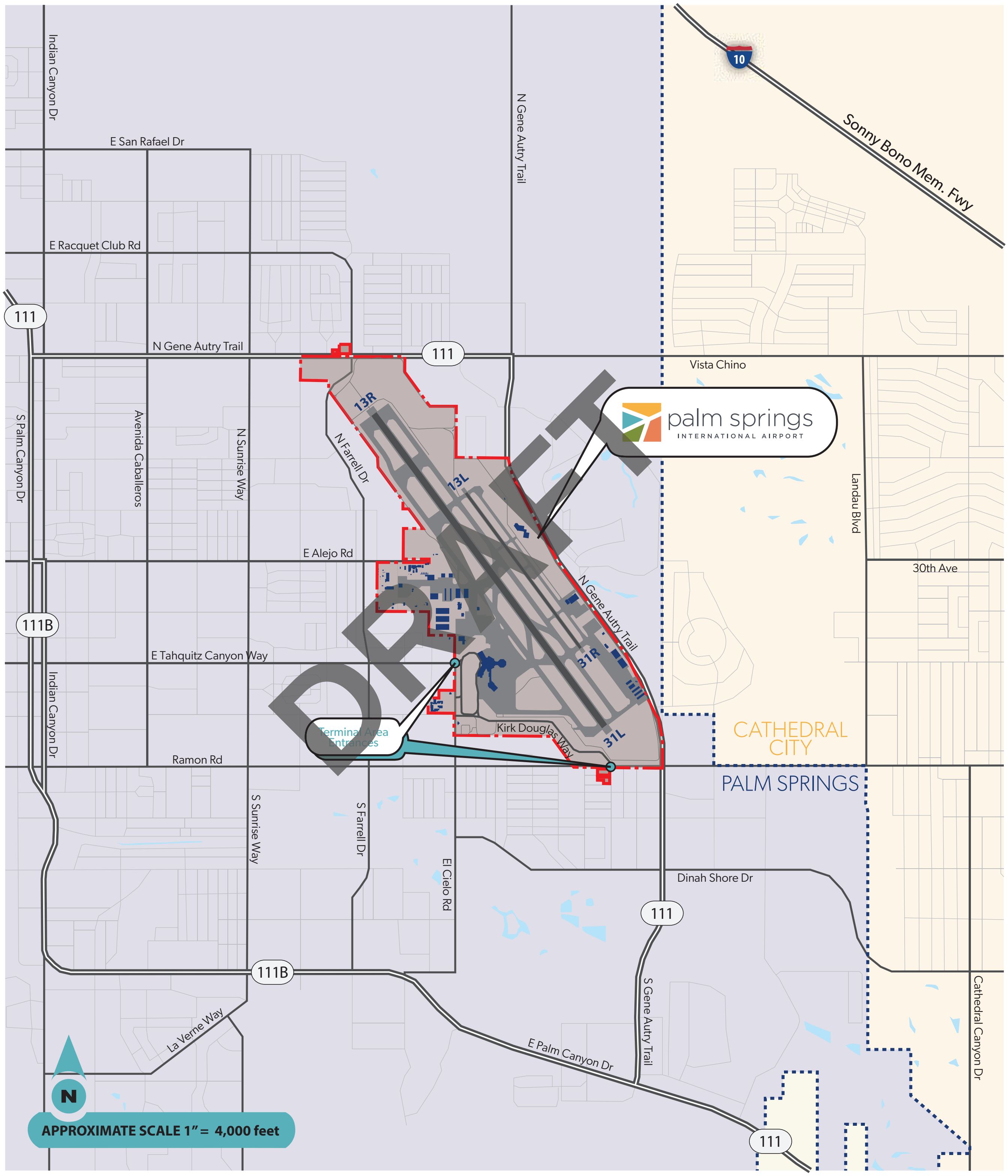
Figure 1-2: Airport Vicinity Map


Indian Canyon Dr
E San Rafael Dr
N Gene Autry Trail
10
Sonny Bono Mem. Fwy
E Racquet Club Rd
111
N Gene Autry Trail
111
Vista Chino
palm springs
INTERNATIONAL AIRPORT
13R
13L
S Palm Canyon Dr
Avenida Caballeros
N Sunrise Way
N Farrell Dr
Landau Blvd
E Alejo Rd
30th Ave
N Gene Autry Trail
111B
E Tahquitz Canyon Way
31R
Indian Canyon Dr
Terminal Area Entrances
Kirk Douglas Way
31L
CATHEDRAL CITY
Ramon Rd
PALM SPRINGS
S Sunrise Way
S Farrell Dr
El Cielo Rd
Dinah Shore Dr
111
111B
S Gene Autry Trail
Cathedral Canyon Dr
La Verne Way
E Palm Canyon Dr
N
APPROXIMATE SCALE 1" = 4,000 feet
111

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Commercial Air Service

Currently, 12 airlines serve PSP and providing year-round and seasonal nonstop flights to more than 30 destinations as outlined in **Table 1-1**.

Table 1-1: Commercial Service

Airline	Nonstop Route	Service Type
Air Canada	Toronto	Seasonal
	Vancouver	Seasonal
Alaska	Boise	Seasonal
	Everette	Seasonal
	Portland	Seasonal
	San Francisco	Year-Round
	San Jose	Year-Round
	Seattle	Year-Round
Allegiant	Bellingham	Year-Round
	Des Moines	Seasonal
American	Austin	Seasonal
	Chicago (ORD)	Seasonal
	Dallas (DFW)	Year-Round
	Phoenix	Year-Round
Avelo	Bend/Redmond	Seasonal
	Eugene	Seasonal
	Santa Rosa	Seasonal
Delta	Atlanta	Seasonal
	Minneapolis	Seasonal
	Salt Lake City	Year-Round
	Seattle	Seasonal
JetBlue	New York (JFK)	Seasonal
Southwest	Dallas Love	Seasonal
	Denver	Year-Round
	Las Vegas	Year-Round
	Oakland	Year-Round
	Phoenix	Year-Round
	Portland	Seasonal
	Sacramento	Year-Round
	San Jose	Year-Round
Sun Country	Minneapolis	Seasonal
United	Chicago (ORD)	Seasonal
	Denver	Year-Round
	Houston	Seasonal
	Los Angeles	Seasonal
	San Francisco	Year-Round
WestJet	Calgary	Year-Round
	Edmonton	Seasonal
	Vancouver	Year-Round
	Winnipeg	Seasonal
Flair	Edmonton	Seasonal
	Toronto	Seasonal
	Vancouver	Seasonal

Source: *PSP Website.*

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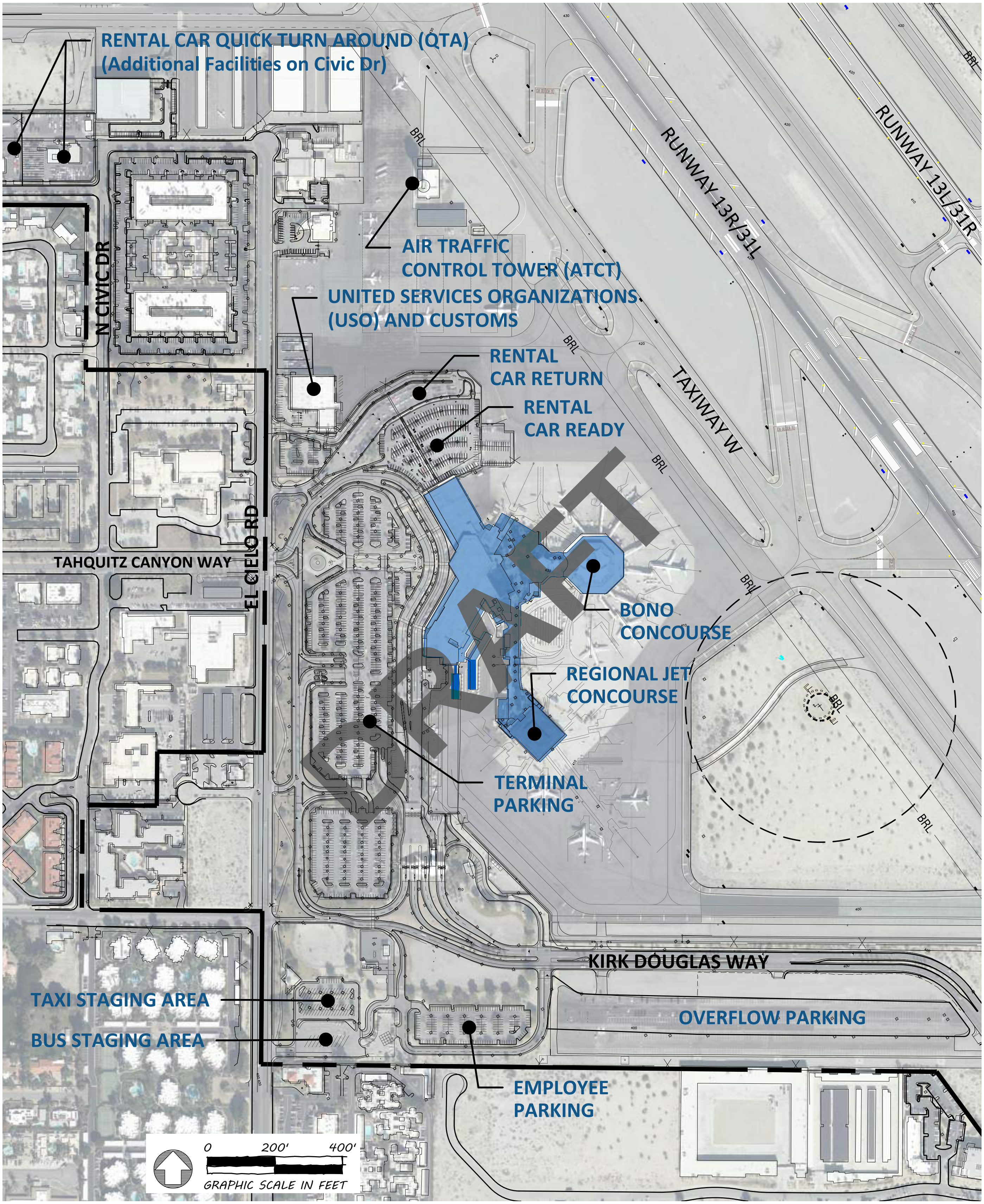
TERMINAL AREA FACILITIES

Facilities information was gathered from base files, as well as on-site observations, interviews, and a review of historical airport records. The following sections in this chapter provide information on terminal area facilities and functionality. **Figure 1-3** provides a general depiction of terminal area facilities.

Figure 1-3: Terminal Area Facilities


RENTAL CAR QUICK TURN AROUND (QTA)
(Additional Facilities on Civic Dr)
AIR TRAFFIC
CONTROL TOWER (ATCT)
UNITED SERVICES ORGANIZATIONS
(USO) AND CUSTOMS
RENTAL
CAR RETURN
RENTAL
CAR READY
RUNWAY 13R/31L
RUNWAY 13L/31R
TAXIWAY W
BRL
N CIVIC DR
EL CIELO RD
TAHQUITZ CANYON WAY
BONO
CONCOURSE
REGIONAL JET
CONCOURSE
TERMINAL
PARKING
KIRK DOUGLAS WAY
TAXI STAGING AREA
BUS STAGING AREA
OVERFLOW PARKING
EMPLOYEE
PARKING
0
200'
400'
GRAPHIC SCALE IN FEET

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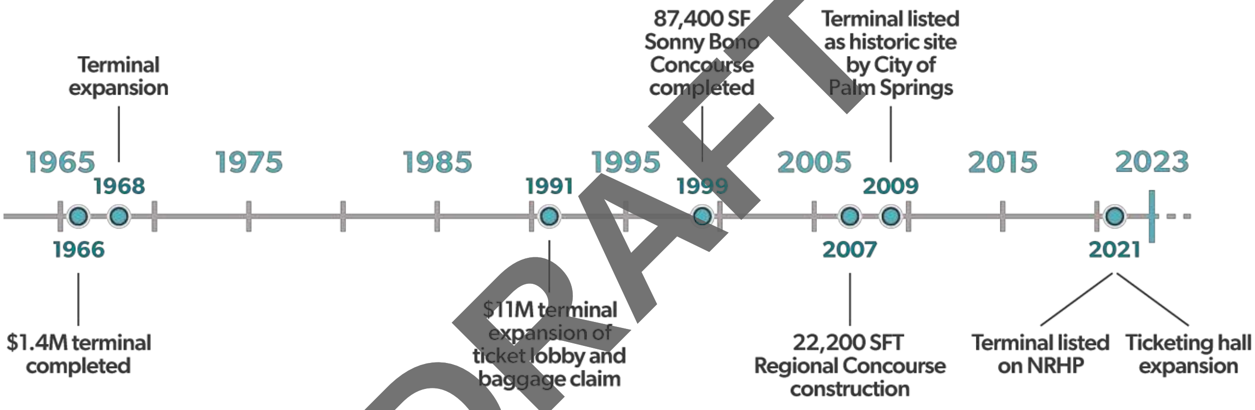
Passenger Terminal Complex Overview

PSP was originally built in 1939 as an emergency landing field for the United States Army Air Corps. In 1941, the Air Corps Ferrying Command 21st Ferrying Group acquired the land after the War Department deemed the emergency landing field essential to national defense. The City of Palm Springs purchased the land in 1961 and converted the airfield into Palm Springs Municipal Airport.

The passenger terminal complex has had two significant expansions since it was originally constructed in 1966. The passenger terminal building now consists of roughly 295,000 square feet (SF) of space, including 249,000 SF of ground floor space, and 46,000 SF of second floor space. In 1999, the 87,632 SF Sonny Bono Concourse was constructed; in 2007, the 22,200 SF Regional Jet Concourse was constructed (2,000 SF for a restroom and 20,200 SF of hold room and concession areas). **Figure 1-4** provides timeline of terminal construction, expansions, and other notable events.

Figure 1-4: PSP Terminal Building Development Timeline


Terminal expansion
87,400 SF Sonny Bono Concourse completed
Terminal listed as historic site by City of Palm Springs
1965
1975
1985
1995
2005
2015
2023
1968
1991
1999
2009
1966
2007
2021
$1.4M terminal completed
$11M terminal expansion of ticket lobby and baggage claim
22,200 SFT Regional Concourse construction
Terminal listed on NRHP
Ticketing hall expansion

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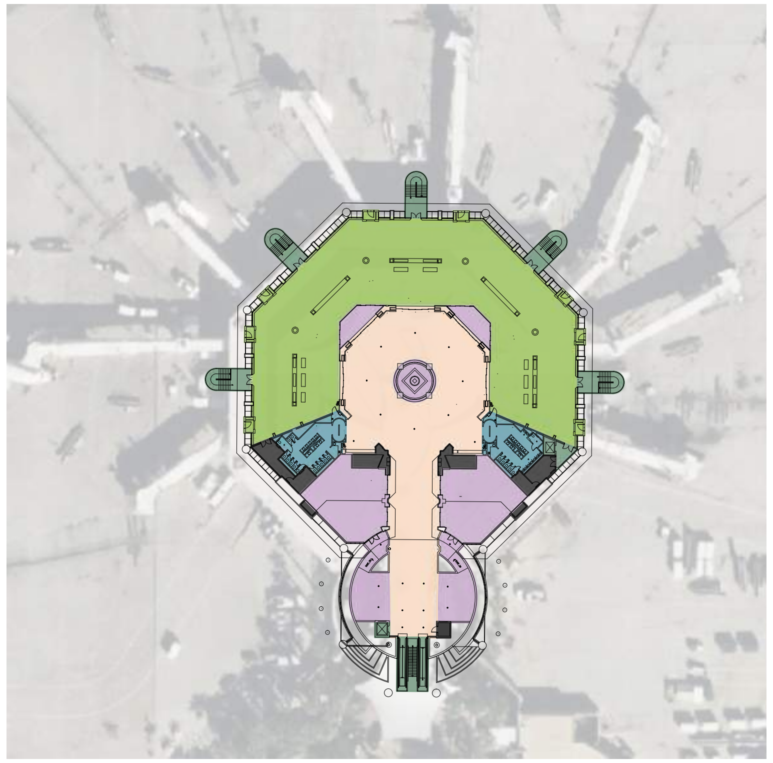
Source: *Mead & Hunt, 2023.*

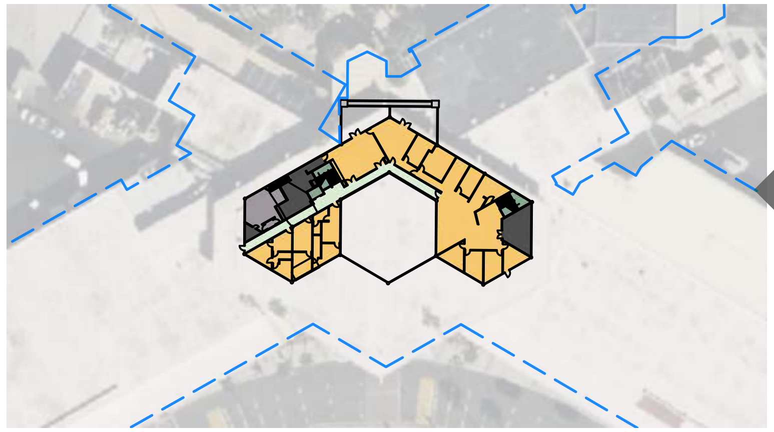
The terminal is located on the west side of the two runways at PSP. Airline ticketing counters and offices, baggage claim/handling, Transportation Security Administration (TSA) security screening, rental car counters, passenger departure gates, and a self-serve snack bar occupy the first floor of the terminal. Airport administration offices and public restrooms occupy the second floor of the terminal building. Several entrances allow passengers arriving at PSP to enter the terminal on the ground level. Passengers can enter through the south terminal doors, located by Sun Country, American, and Delta Airlines, as well as in the center of the terminal (direct access to TSA queue lines), and the three doors located near baggage claims. On the north side of the terminal, passengers may enter the baggage claim and car rental counter areas via the entrance from the rental car parking lots. Functional areas within the terminal, Sonny Bono Concourse, and Regional Jet Concourse are depicted in **Figure 1-5**. **Figure 1-6** and **Figure 1-7** provide more focused depictions of the first and second level passenger terminal plans. The **Terminal Building** section of this chapter provides a detailed evaluation of the passenger terminal building.

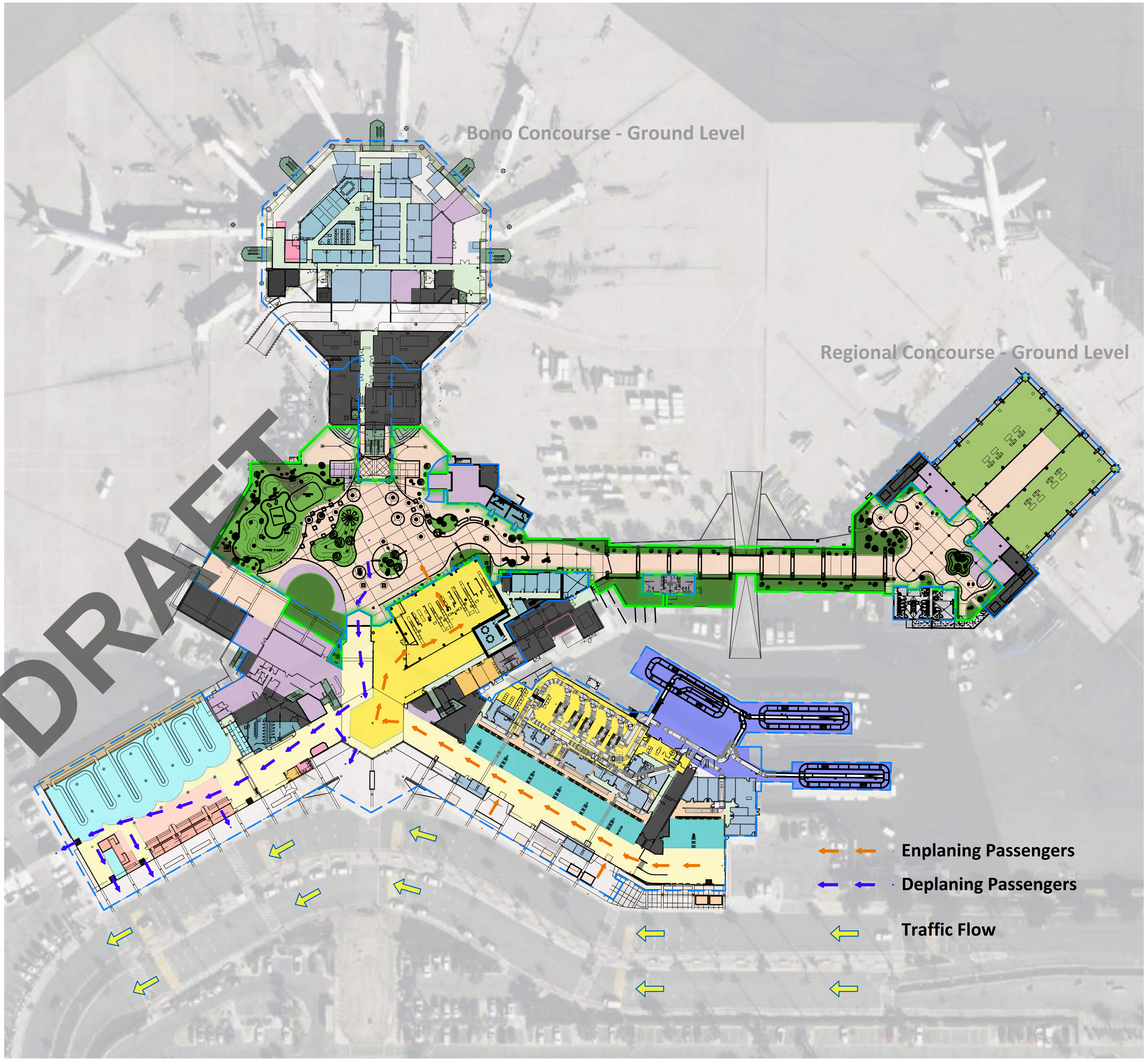
Figure 1-5: Passenger Terminal Complex

Legend

- 🟦 Airline Operations Offices
- 🟧 Ticketing Area
- 🟦 Ticketing Queuing
- 🟨 Security Screening Checkpoint
- 🟦 TSA Offices
- 🟦 Baggage Claim
- 🟪 Outbound Baggage
- 🟫 Inbound Baggage
- 🟨 Baggage Screening
- 🟦 Public Restrooms
- ⬛ Non-Public Restrooms
- 🟥 Rental Car Facilities
- 🟧 Rental Car Queuing
- 🟨 Public Circulation
- 🟩 Non-Public Circulation
- 🟧 Secure Circulation
- 🟩 Vertical Circulation
- 🟧 Airport Administrative
- 🟩 Outdoor Airport Amenities
- 🟩 Terminal Landscaping
- ⬛ Building Systems
- 🟪 Concessions
- 🟩 Departure Lounge
- ▭ Roof Above
- 🟩 Outdoor Spaces


Bono Concourse - Second Level


Terminal - Mezzanine Level


Bono Concourse - Ground Level
Regional Concourse - Ground Level
Enplaning Passengers
Deplaning Passengers
Traffic Flow
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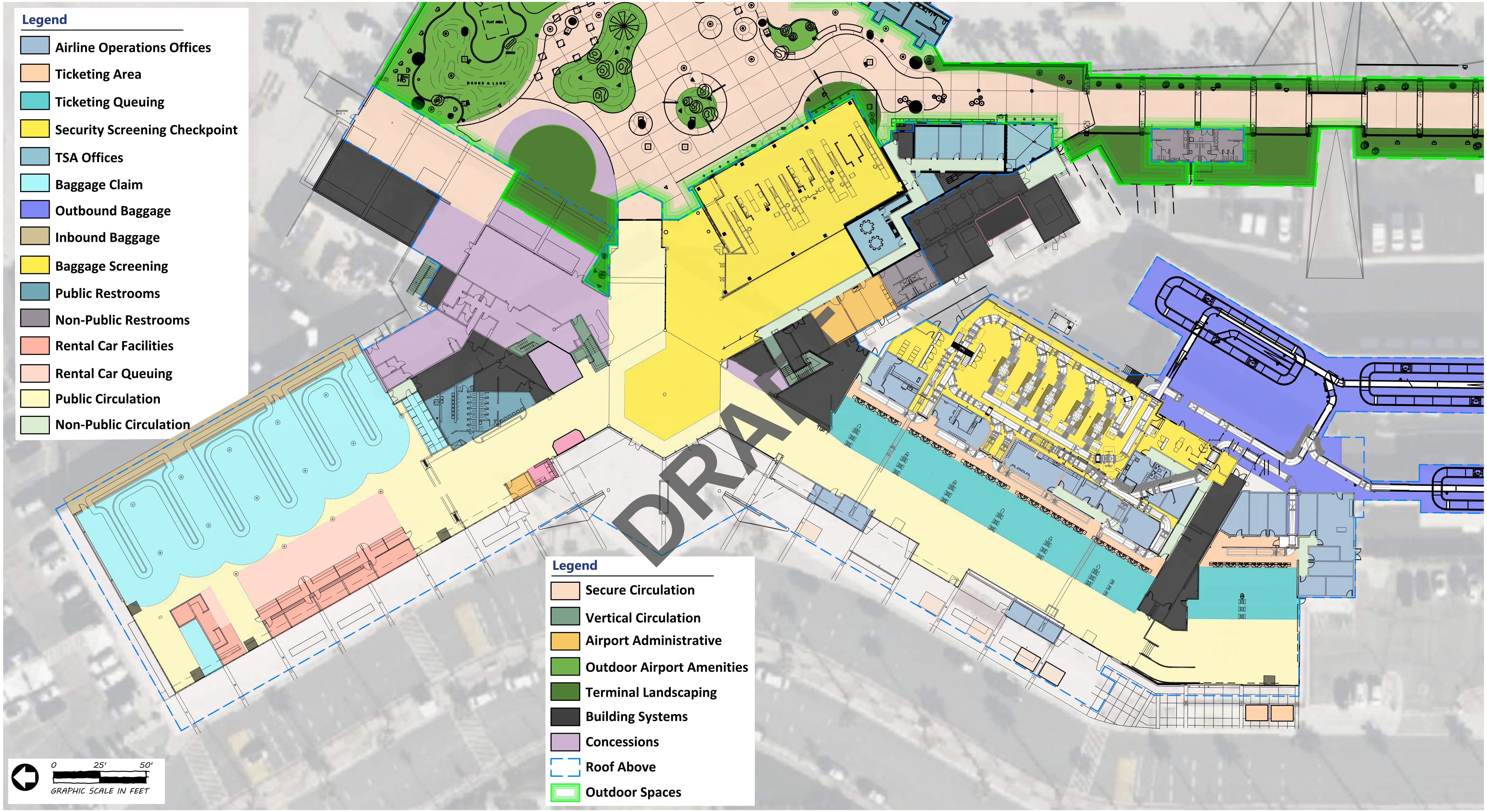
Terminal - Ground Level/First Floor

0
60'
120'
GRAPHIC SCALE IN FEET

Figure 1-6: Terminal Floor Plan - First Level


Legend
Airline Operations Offices
Ticketing Area
Ticketing Queuing
Security Screening Checkpoint
TSA Offices
Baggage Claim
Outbound Baggage
Inbound Baggage
Baggage Screening
Public Restrooms
Non-Public Restrooms
Rental Car Facilities
Rental Car Queuing
Public Circulation
Non-Public Circulation
Legend
Secure Circulation
Vertical Circulation
Airport Administrative
Outdoor Airport Amenities
Terminal Landscaping
Building Systems
Concessions
Roof Above
Outdoor Spaces
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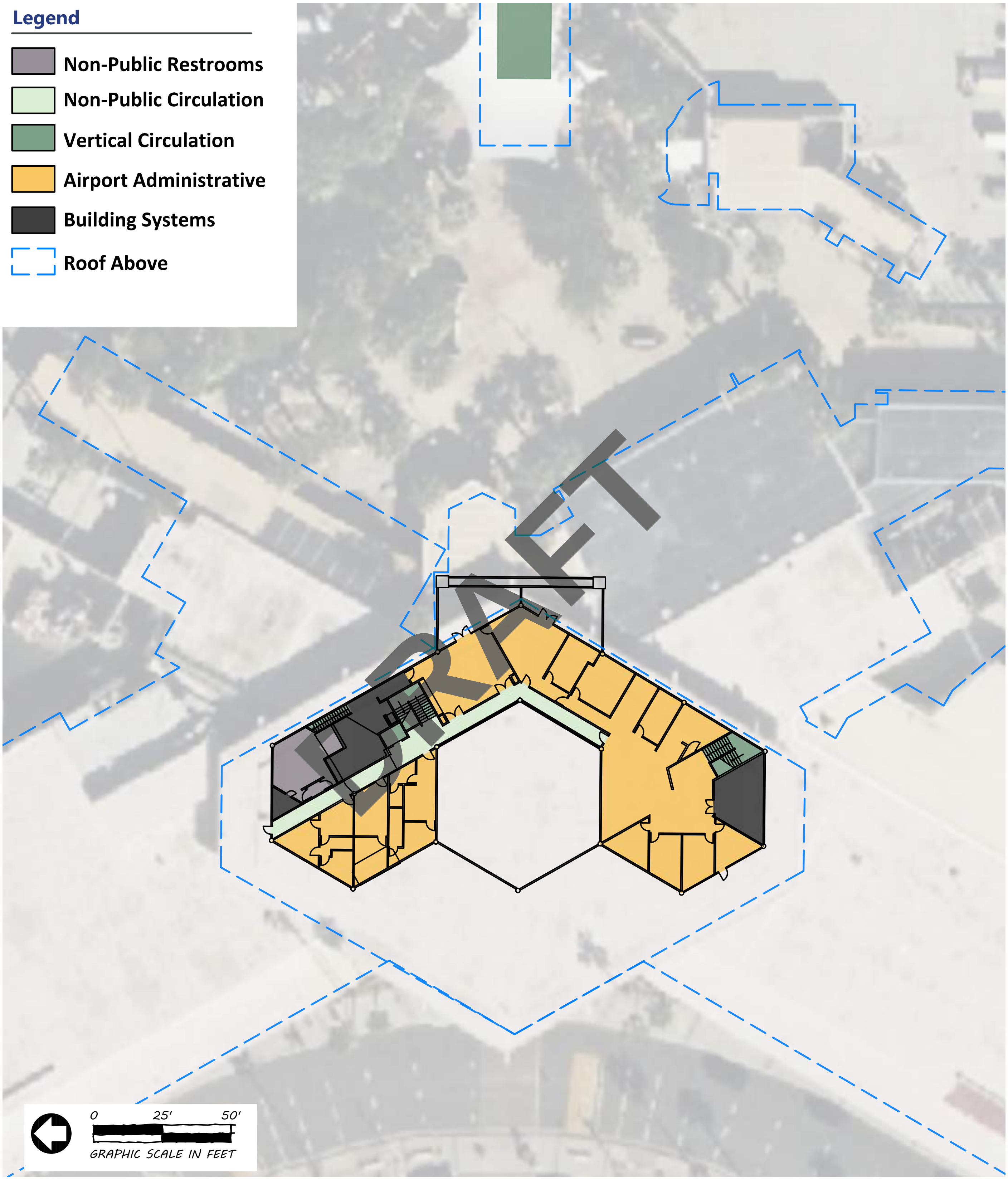
0
25'
50'
GRAPHIC SCALE IN FEET

Figure 1-7: Terminal Floor Plan - Mezzanine Level


Legend
Non-Public Restrooms
Non-Public Circulation
Vertical Circulation
Airport Administrative
Building Systems
Roof Above
0
25'
50'
GRAPHIC SCALE IN FEET

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Terminal – Airside Elements

The commercial aircraft parking apron at PSP is located east of the passenger terminal building and west of Runway 13R/31L. Currently 11 aircraft parking positions surround the Regional Concourse and 9 aircraft parking positions surround the Sonny Bono Concourse. **Figure 1-8** provides details on aircraft parking positions, gate numbering, and the type of aircraft each gate is capable of supporting.

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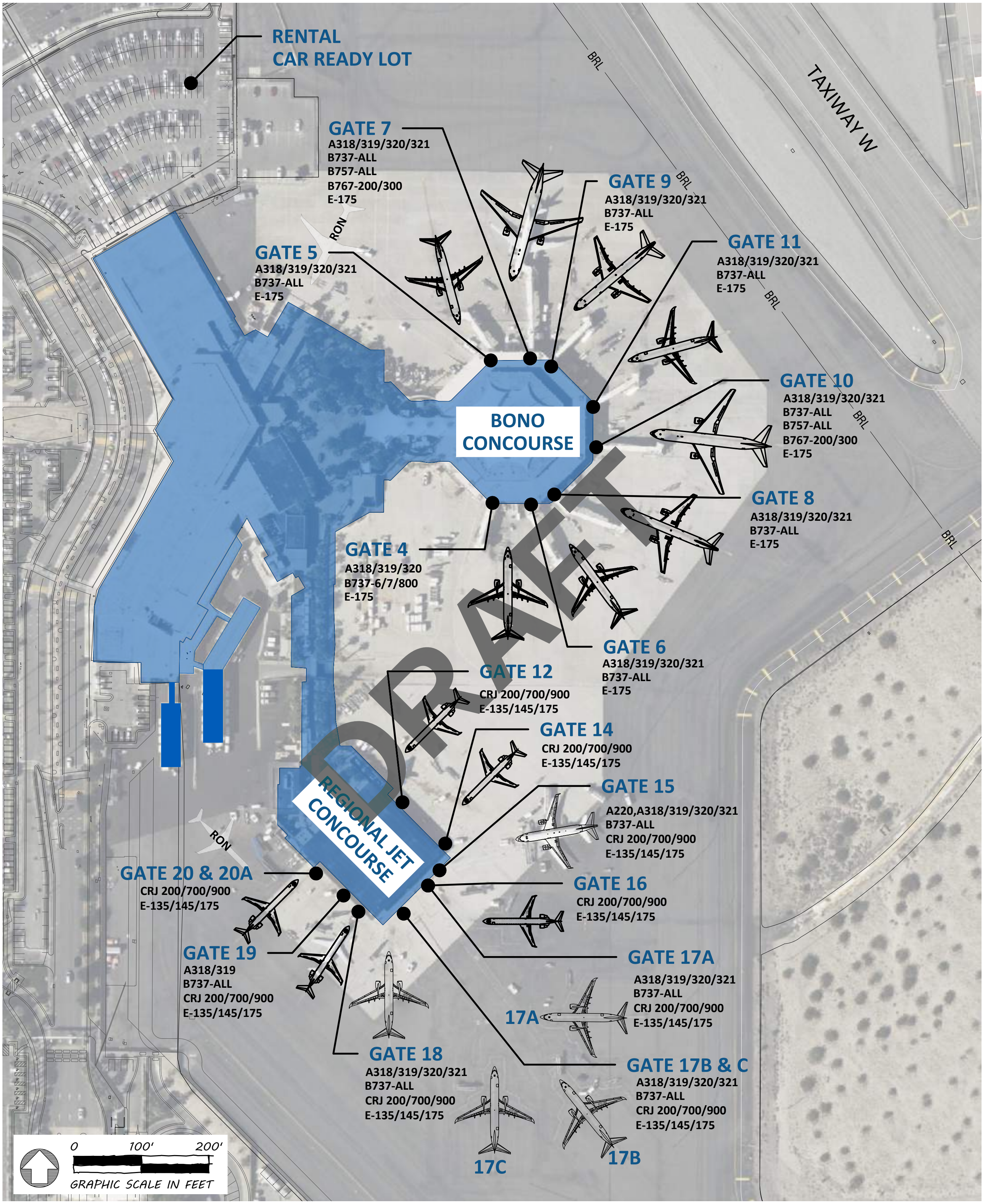
Figure 1-8: Terminal - Airside


RENTAL
CAR READY LOT
BRL
TAXIWAY W
GATE 7
A318/319/320/321
B737-ALL
B757-ALL
B767-200/300
E-175
GATE 9
A318/319/320/321
B737-ALL
E-175
RON
GATE 5
A318/319/320/321
B737-ALL
E-175
GATE 11
A318/319/320/321
B737-ALL
E-175
BONO
CONCOURSE
GATE 10
A318/319/320/321
B737-ALL
B757-ALL
B767-200/300
E-175
GATE 8
A318/319/320/321
B737-ALL
E-175
GATE 4
A318/319/320
B737-6/7/800
E-175
GATE 6
A318/319/320/321
B737-ALL
E-175
GATE 12
CRJ 200/700/900
E-135/145/175
GATE 14
CRJ 200/700/900
E-135/145/175
GATE 15
A220,A318/319/320/321
B737-ALL
CRJ 200/700/900
E-135/145/175
REGIONAL JET
CONCOURSE
RON
GATE 20 & 20A
CRJ 200/700/900
E-135/145/175
GATE 16
CRJ 200/700/900
E-135/145/175
GATE 19
A318/319
B737-ALL
CRJ 200/700/900
E-135/145/175
GATE 17A
A318/319/320/321
B737-ALL
CRJ 200/700/900
E-135/145/175
17A
GATE 18
A318/319/320/321
B737-ALL
CRJ 200/700/900
E-135/145/175
GATE 17B & C
A318/319/320/321
B737-ALL
CRJ 200/700/900
E-135/145/175
17C
17B
0
100'
200'
GRAPHIC SCALE IN FEET
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TERMINAL BUILDING

This section describes existing terminal facility conditions. The terminal building was inventoried, and its layout was assessed for overall performance. Subsequent chapters will identify physical and operational deficiencies of the existing terminal building and its systems. Additional references for this section include airport meetings, examinations of plans, and a review of previous planning documents. **Table 1-2** provides a breakdown of terminal space by functional area.

Table 1-2: Terminal Complex Space Breakdown

Space Description	Level 1	Level 2
Ticketing Area		
Ticket Agent Positions (# of)	51	-
Bag-Drop	10	-
Kiosks (# of)	24	-
Ticket Counter Length (FT)	230	-
Ticket Counter Area (SF)	3,008	-
Ticketing Queuing (SF)	5,923	-
Airline Operation Office Space and Storage	6,240	-
Total Ticketing Area	***15,171***	***0***
Baggage Claim Area		
Bag Claim Carousel, Floor Area & Oversize (SF)	11,391	-
Baggage Service Offices (SF)	697	-
Bag Claim Carousel Frontage (LF)	667	-
Bag Claim Carousel (Slope Plate) (# of)	3 26,300	-
Outbound Baggage (SF)	1,920	-
Inbound Baggage (SF)	3	-
Total Public Baggage Areas	***40,308***	***0***
Airport Support Area		
Administrative (SF)	1,533	6,368
Storage / Maintenance (SF)	7,608	-
Total Airport Area	***9,141***	***6,368***

Space Description	Level 1	Level 2
Concessions		
Pre-Secure		
Food and Beverage (SF)	460	-
Retail (SF)	284	-
Storage and Support (SF)	6,916	-
Subtotal Pre-Secure Concessions	***7,660***	-
Post-Secure		
Food and Beverage (SF)	5,204	4,573
Retail (SF)	1,323	2,649
Storage and Support (SF)	2,570	-
Subtotal Post Secure Concessions	***9,097***	***7,222***
Total Concessions Area	***16,757***	***7,222***
Departure Lounges		
Gates (# of)	10	8
Gate Departure Lounges (SF)	12,606	16,636
Total Departure Lounge Area	***12,606***	***16,636***
Rental Car Area		
Car Rental Ticket Counter Area (SF)	870	-
Rental Car Queuing (SF)	2,330	-
Car Rental Office Area (SF)	1,159	-
Total Car Rental Area	***4,359***	***0***

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Space Description	Level 1	Level 2
General Spaces		
Non-Secure		
Public Circulation (SF)	20,725	-
Restroom Area (M+F+Family) (SF)	1,198	523
M+F+Family Restroom fixtures (# of)	15+6	-
Subtotal Public Areas	***21,923***	***523***
Secure		
Secure Public Circulation (sf)	40,944	10,763
Outdoor Airport Amenities*	10,326	-
Terminal Landscaping	13,248	-
Restroom Area (M+F+Family) (SF)	2,690	2,232
M+F+Family Restroom fixtures (# of)	8+10	15+13
Subtotal Public Areas	***67,208***	***12,995***
Non-Public		
Non-Public Circulation (SF)	9,511	915
Restroom Area (SF)	1,973	-
Subtotal Non-Public Area	***11,484***	***915***
Vertical Circulation	3,442	-
Total General Area	***104,057***	***14,433***

Space Description	Level 1	Level 2
Transportation Security Administrative (TSA) Areas		
Security Screening Checkpoint (SSCP)		
Lanes (w/PreCheck) (# of)	6	-
Checkpoint (SF)	7,034	-
Checkpoint Queue (SF)	5,500	-
TSA Admin Offices and Support Space (SF)	6,025	-
Subtotal SSCP Area	***18,565***	***0***
Baggage Screening Areas		
Explosive Detection System (EDS) Devices (# of)	5	-
TSA Bag Screening Floor Area (SF)	8,896	-
Subtotal Baggage Screening Area	8,896	0
Total TSA Area	***27,461***	***0***
Building Support		
Building Systems and Major Chases	23,059	2,534
Subtotal Building Support Space	***23,059***	***2,534***
TOTAL TERMINAL FACILITY AREA		

Source: *Mead & Hunt, 2023.*

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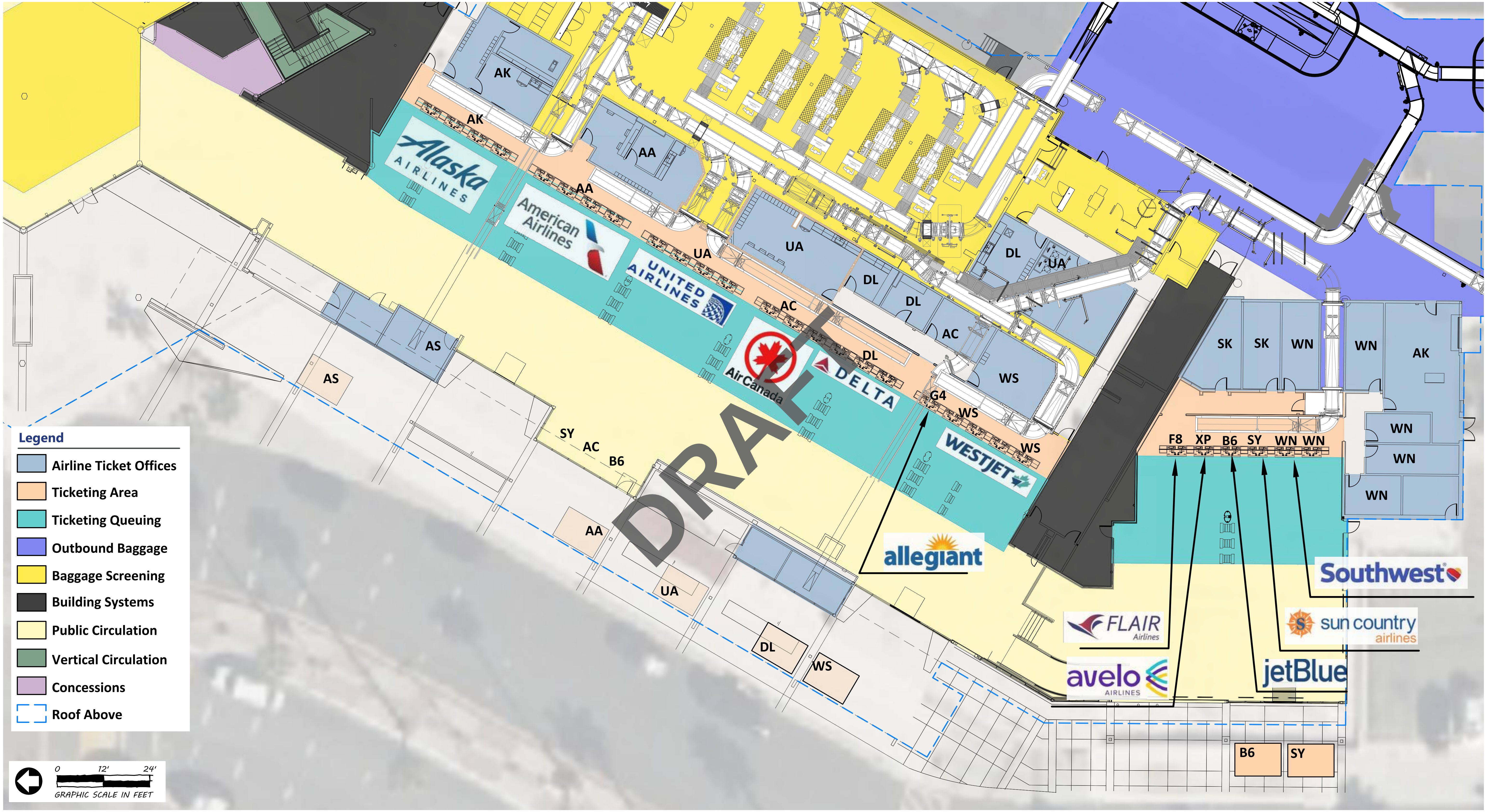
Ticketing Area and Airline Ticket Offices

The ticketing area is on the south portion of the terminal and consists of ticket counters, kiosks, bag-drop stations, curbside check-in counters, passenger queueing, circulation, and the airline ticket counters. Twelve airlines occupy 46 total full-service ticket counter positions (FSP) in the ticket lobby of the terminal building, depicted **Figure 1-9**. In 2021, the main terminal ticketing area was modernized and renovated with the following improvements:

- Ticketing hall expansion and renovation
- Shared use systems for ticket counter airline check-in process
- Baggage screening consolidation and expansion
- Baggage make-up carousel.

Figure 1-9: Airline Ticketing and Offices


AK
AK
AA
AA
UA
UA
UA
DL
DL
DL
DL
AC
AC
G4
WS
WS
WS
SK
SK
WN
WN
AK
WN
WN
WN
F8
XP
B6
SY
WN
WN
AS
AS
SY
AC
B6
AA
UA
DL
WS
B6
SY
Alaska Airlines
American Airlines
United Airlines
Air Canada
Delta
WestJet
allegiant
Southwest
FLAIR Airlines
sun country airlines
avelo airlines
jetBlue
DRAFT
Legend
Airline Ticket Offices
Ticketing Area
Ticketing Queuing
Outbound Baggage
Baggage Screening
Building Systems
Public Circulation
Vertical Circulation
Concessions
Roof Above
0
12'
24'
GRAPHIC SCALE IN FEET

Additionally, two common-use FSPs and five open FSPs are available for future airlines. The airlines listed in **Table 1-3** occupy the following space:

Table 1-3: PSP Ticketing

Airline	Counter Positions	Self-Check-In Kiosks	Bag Drop Positions	Curbside Check-In Counters
Air Canada	6	0	0	0
Alaska	6	5	1	2
Allegiant	3	0	0	0
American	6	3	2	2
Avelo	1	0	0	0
Delta	6	3	0	1
Flair	1	0	0	0
JetBlue	2	2	1	0
Southwest	4	2	0	0
Sun Country	2	0	0	1
United	4	4	4	1
WestJet	5	5	2	0

Source: *Mead & Hunt, 2023.*

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The processing area, which includes the area from the front of the counters to the wall separating the airline ticket offices and ticketing area, provides 5 feet of depth. The passenger processing area, the area where passengers stand at the counters, is approximately 10 feet deep, with space reserved for queuing providing approximately 20 feet of depth. Some airlines that use kiosks mix their kiosks in with the queuing area. Beyond queuing is passenger circulation, which consists of a 20-foot-deep corridor that facilitates the movement of passengers and bags between the ticketing area and security screening checkpoint.

Airline ticket offices (ATOs) are behind the ticketing area and consist of operations space, IT closets, and breakrooms for airline employees.

Outbound Baggage Screening and Make-Up Area

Behind the ATOs is the baggage handling system (BHS), which was recently reconstructed in 2021 (**Figure 1-5** and **Figure 1-6**). The 8,896 SF BHS expansion consists of four CT-80DR+XL explosive detection system (EDS) scanners and one CT-80DR+L scanner with sufficient space to another EDS scanner. With the existing five scanners, baggage throughput is approximately 820-920 bags per hour. A sixth CT-80 machine is anticipated to be installed in late May 2023. Baggage travels to the baggage screening room through seven conveyor lanes—five from the check-in area and two from sub-grade conveyors from the curbside counters. Once baggage reaches the EDS machines, handlers place it manually into the machine. Once screened, another person manually places the bag on the conveyor, which then moves the bag to the outbound baggage make-up area.

Recent reconstruction of the outbound baggage make-up area occurred with the baggage handling system in 2021 and consists of three, slope-faced, oval carousels. Around each carousel is a staging lane for 16 carts to park parallel to the carousel along with a 10-foot bypass lane. The carousels and staging lanes are covered, while the bypass lanes are not.

Passenger Security Screening

The security screening checkpoint (SSCP) is in the middle of the terminal between the ticketing counter and the baggage claim area as shown in **Figure 1-10**. The SSCP comprises passenger queuing, travel document checkers, six screening lanes, and a recomposure area. TSA PreCheck® and CLEAR are available to passengers. The approximate 6,400 SF queuing area has expanded into the center atrium to accommodate the significant surge of departing traffic during peak times. After queuing, passengers pass through Leidos AIT and AIT2 scanners for screening. The six-lane exiting configuration has an approximate throughput capacity of 990 passengers per hour. Screened passengers enter the recomposure area, which is directly outside of the SSCP.

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Departure Lounges

PSP currently has 16 departure gates. The Sonny Bono Concourse has 8 contact gates, labeled 4 through 11. Gate 1 at the Sonny Bono Concourse is primarily used as a remain overnight (RON) apron but can be utilized as a boarding gate. The Regional Concourse has 8 ground-boarded gates, labeled 12 and 14 through 20, serving 10 aircraft parking positions. The departure lounges in the Sonny Bono Concourse include a 25-foot depth seating area, customer service desks for airlines, and 20-foot depth space for standing around the entirety of the concourse. All passengers walk to their appointed concourse from the outdoor terminal areas and board the departing aircraft via a passenger boarding bridge at the Sonny Bono Concourse or ground-board at the Regional Concourse. **Figure 1-11** details the Regional Jet Concourse and **Figure 1-12** details the Sonny Bono Concourse.

Figure 1-10: Security Screening Checkpoint

Legend

- 🟧 Airport Administrative
- 🟫 Secure Circulation
- 🟨 Public Circulation
- ⬛ Non-Public Restrooms
- ⬛ Building Systems
- 🟨 Security Screening Checkpoint
- 🟦 TSA Offices
- 🟩 Vertical Circulation
- 🟩 Non-Public Circulation
- 🟩 Outdoor Airport Amenities
- 🟩 Terminal Landscaping
- ⬚ Roof Above
- 🟩 Outdoor Spaces

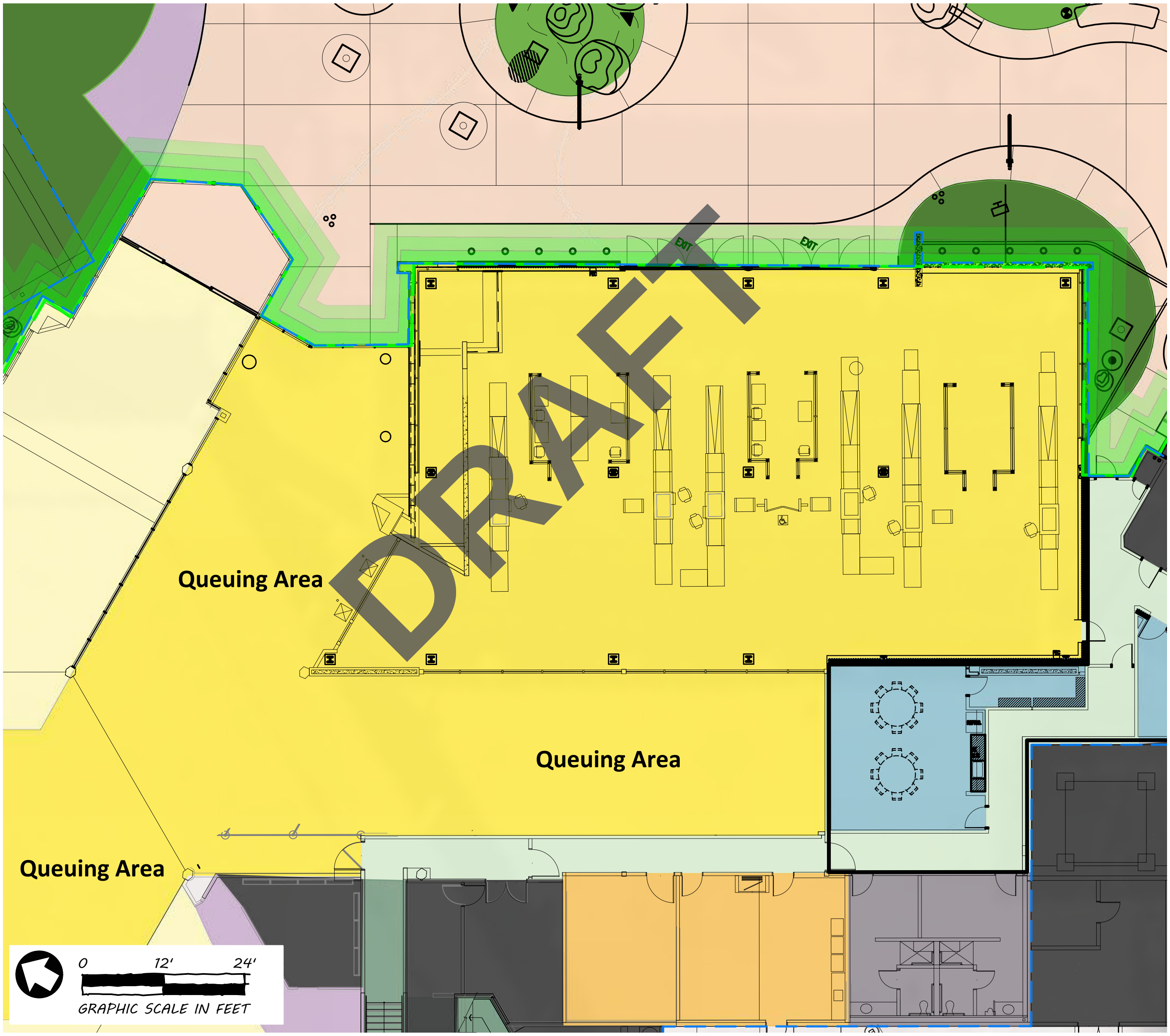
EXIT
EXIT
Queuing Area
Queuing Area
Queuing Area
0
12'
24'
GRAPHIC SCALE IN FEET

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Figure 1-11: Regional Jet Concourse

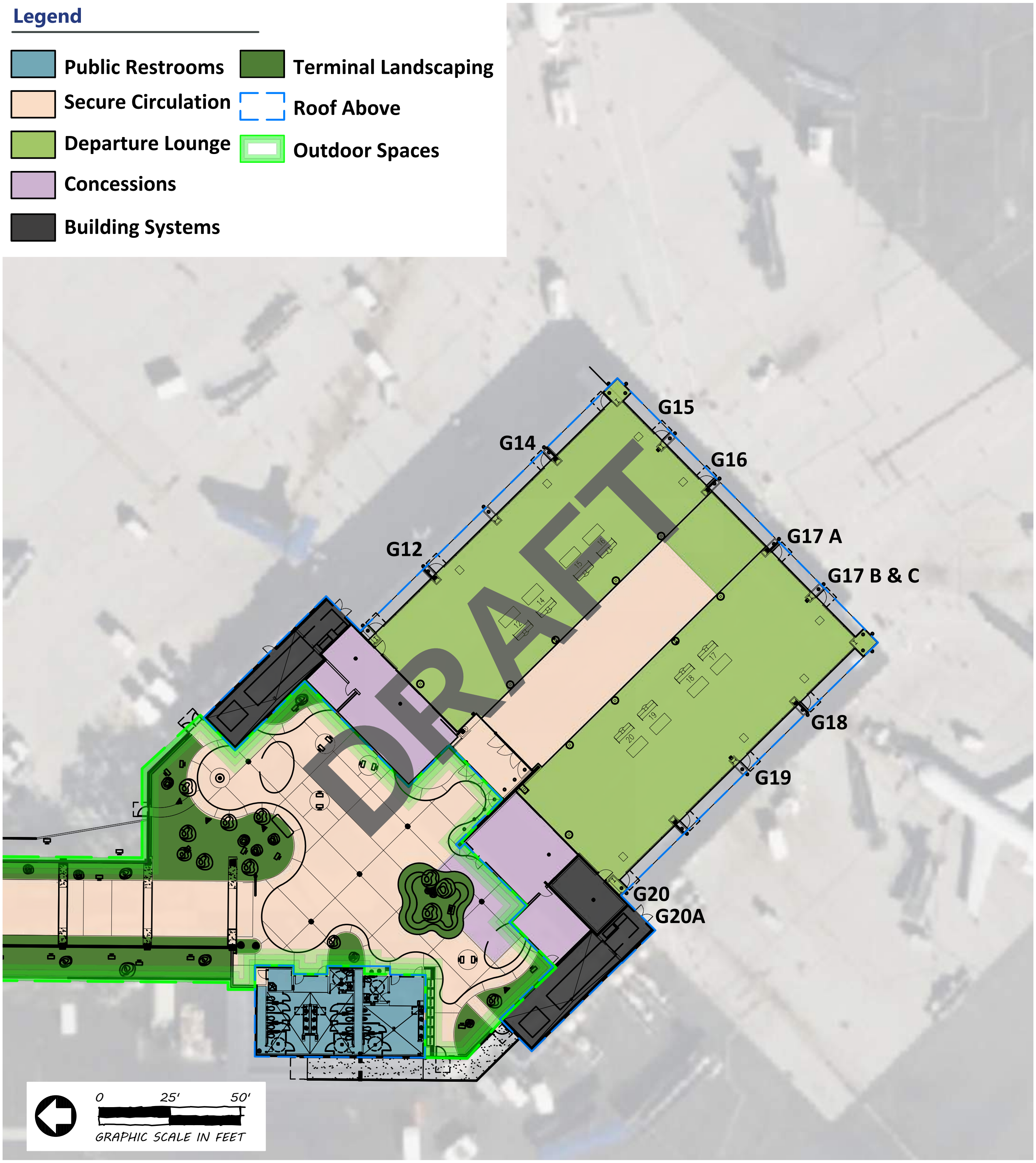
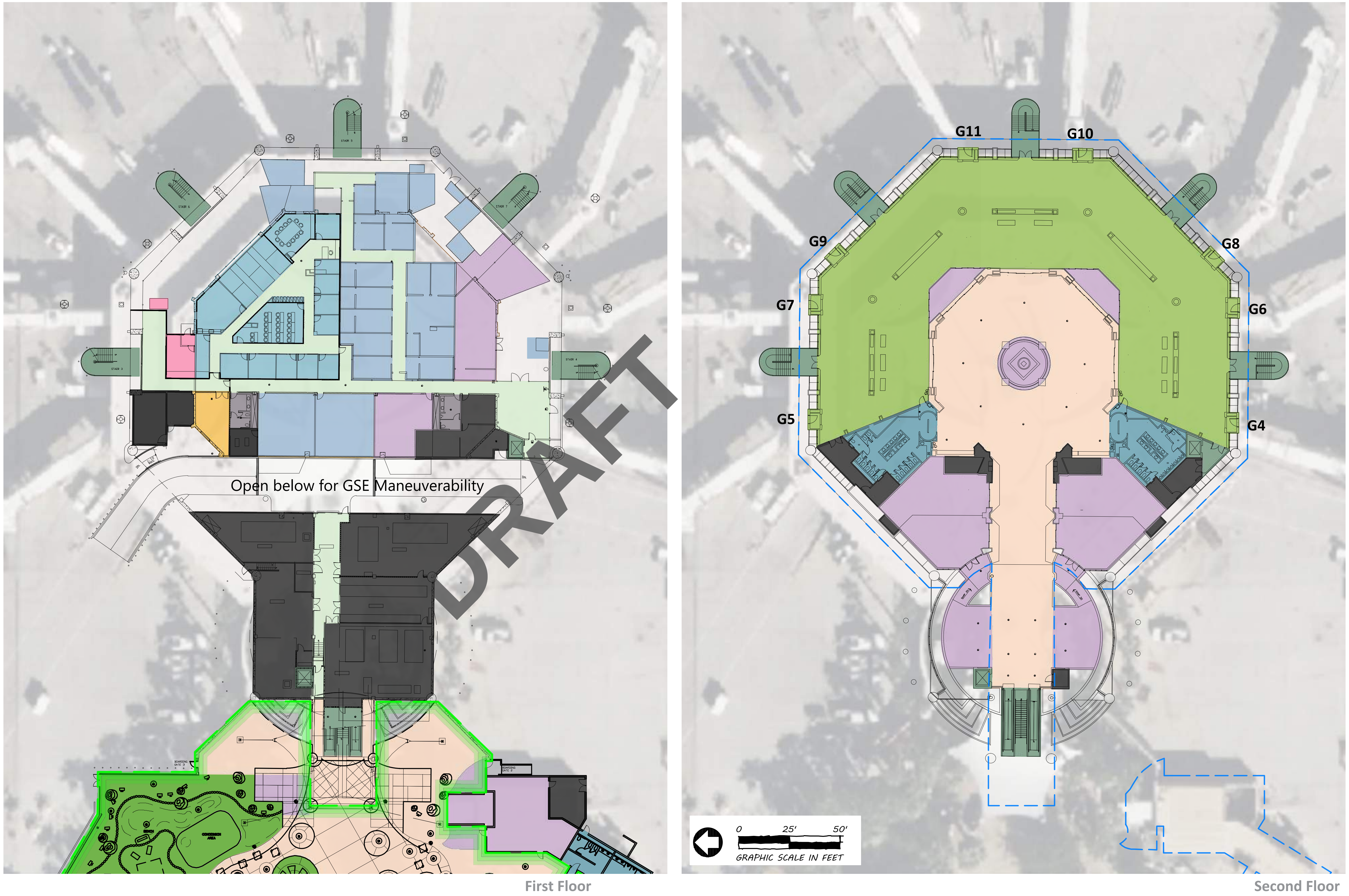

Legend
Public Restrooms
Secure Circulation
Departure Lounge
Concessions
Building Systems
Terminal Landscaping
Roof Above
Outdoor Spaces
G15
G14
G16
G12
G17 A
G17 B & C
G18
G19
G20
G20A
DRAFT
0
25'
50'
GRAPHIC SCALE IN FEET

Figure 1-12: Sonny Bono Concourse

Legend

- 🟦 Public Restrooms
- 🟪 Non-Public Restrooms
- 🟩 Non-Public Circulation
- 🟧 Secure Circulation
- 🟩 Vertical Circulation
- 🟩 Departure Lounge
- 🟪 Concessions
- 🟨 Airport Administrative
- 🟩 Outdoor Airport Amenities
- ⬛ Building Systems
- 🟦 TSA Offices
- 🟦 Airline Operations Offices
- ⬚ Roof Above
- 🟩 Outdoor Spaces


Open below for GSE Maneuverability
DRAFT
First Floor
G11
G10
G9
G8
G7
G6
G5
G4
0
25'
50'
GRAPHIC SCALE IN FEET
Second Floor

Inbound Baggage Make-Up Area and Baggage Claim

The inbound baggage make-up area is located on the north side of the terminal on the secure side of the wall from baggage claim. The make-up area located outside consists of a staging lane for carts to stage parallel to one of the three carousels.

The baggage claim area consists of three U-shaped, flat-plated carousels. Baggage carousel #1 has a linear frontage of 206 feet, baggage carousel #2 has a linear frontage of 242 feet, and baggage carousel #3 has a linear frontage of 218 feet. South of the baggage claim are four baggage service counters, which are shared among the airlines.

Rental Cars

Ten rental car companies operating at PSP (eight on-site and two located off-Airport): Alamo, Avis, Budget, Dollar, Enterprise, Hertz, National, and Thrifty are at PSP, whereas Desert Rent-A-Car and Go Rentals are off-Airport. Each of the eight on-site rental car companies has desk space, accompanying office space, and queuing space 20 feet deep leading to the counters. The counters are visible to passengers when they first enter through the baggage claim area. There is a rental car parking lot conveniently located adjacent to the baggage claim areas at the north side of the terminal. There are 332 ready parking spaces and six rental car return lanes capable of accommodating approximately 150 vehicles.

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Restrooms

There are five sets of public restroom modules in the terminal building, which are listed in **Table 1-4**.

Table 1-4: Public Restroom Locations

Location	Men's Fixtures	Women's Fixtures	Other
Pre-Security			
Main Terminal (Level 1)	15	6	Janitor Closet
Main Terminal (Mezzanine)	To be verified	To be verified	N/A
Post-Security			
Adjacent to Regional Concourse	5	10	Janitor Closet
Sonny Bono Concourse	15	13	Janitor Closet
Adjacent to PSP Coffee House	3	3	N/A

Source: *Mead & Hunt, 2023.*

Concessions

The concessions program at PSP consists of pre-secure concessions and post-secure concessions. PSP anticipates changes in concession space use in 2024. PSP currently has 7 percent of their concessions program pre-security and 93 percent of the program post-secure. On the pre-secure side is a self-service concessions area called Snack n Go between the exit lane and baggage claim. A Pay On Foot machine along the west side of the terminal building allows those who utilized public parking to pay their parking ticket. Several gift and specialty item shops are located on the secure side—four in the Sonny Bono Concourse: Desert News, The PGA Tour Shop, Desert Marketplace, and Desert Mart; and one in the Regional Concourse, CNBC. Additionally, there are multiple food and beverage options located on the secure side of the terminal. In the Sonny Bono Concourse is Santa Rosa Kitchen & Spirits. The Sonny Bono Courtyard accommodates a wine and coffee bar named PSP Coffee House and a food stand called Half Moon Empanadas. In the Regional Concourse, the Buzz by Bar Fly offers food and beverage during the day and a full bar at night.

The primary concessions storage areas are located behind the baggage service offices and the Snack n Go on the first level and under the Sonny Bono concourse. Concessions deliveries occur through a secure access gate on the south side of the terminal where delivery trucks are screened and then escorted to the terminal.

Airport Amenities

PSP offers an abundance of airport amenities that enhance the passenger experience. Free public Wi-Fi is available, and artwork is on display throughout the terminal. Having the majority of the secure side exposed to the outdoor environment, passengers have many options to experience the outdoors prior to their flight. This includes grassy areas to rest, a kid's playset, pet relief area, outdoor seating, outdoor concessions, and outdoor viewing areas. Additionally, a mother's nursing station is located between the Sonny Bono Concourse and Regional Concourse.

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Administrative Area

PSP's primary administrative area is located on the mezzanine level of the terminal and consists of 14 offices and a conference room. Airport staff utilize the office space located within the vehicle inspection plaza. There are additional administrative offices and a breakroom for maintenance staff located on the first floor of the Sonny Bono Concourse. PSP's operations space located on the first level is adjacent to the SSCP and outbound baggage make-up area.

TSA's administrative space is split between an area adjacent to the SSCP and baggage screening rooms and an area on the first level of the Sonny Bono concourse.

TERMINAL ACCESS, PARKING, AND SUPPORT FACILITIES

Vehicle Roadway Access and Circulation

PSP is approximately 5 miles south of I-10 and accessible by vehicle from all directions via CA-111. Major streets providing access to the terminal building include East Tahquitz Canyon Way, Kirk Douglas Way, El Cielo Road, Ramon Road, and North Farrell Drive.

From East Tahquitz Canyon Way, vehicles enter a two-lane loop that provides access to public parking. Just before the first turn in the loop, the two lanes divide. The left lane is designated for small (private and commercial) vehicles, and the right lane, for oversized (charter buses, delivery, and cargo) vehicles as well as other commercial vehicles (taxis, charter shuttles, and limos) that access the taxi and bus staging lot south of the Airport. Both lanes direct traffic to the terminal curb front. However, the lane for oversized and commercial vehicles directs traffic towards Kirk Douglas Way, where vehicles make a U-turn back towards the terminal loop road. Oversized vehicles and other commercial vehicles can enter the taxi and bus staging area or make a U-turn turn to the terminal on Kirk Douglas Way located opposite the cargo vehicle exit.

Prior to entering the terminal curbside area, the roadway directs all vehicles through a six-lane vehicle inspection plaza prior to approaching the terminal curbside. The terminal curbside consists of three inner lanes closest to the terminal primarily used for the loading and unloading of private vehicles and three outer lanes that serve commercial vehicles. **Figure 1-13** shows the vehicle parking and circulation system.

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Vehicle Parking

A parking management firm managers public parking facilities at PSP that include four connected parking lots. While public parking is not separated into short- or long-term lots, there are approximately 900 parking spaces in the main lots west of the terminal and approximately 700 spaces available in an overflow parking lot south of Kirk Douglas Way. Parking rates in the main lots are free for the first seven minutes then $2 for every 20 minutes with a maximum $20 dollar charge per 24-hour period. A rate of $18 per day applies to vehicles parking in the overflow parking lot. A cell phone waiting lot located along Kirk Douglas Way provides free temporary parking for vehicles picking up arriving passengers.

Rental car ready/return parking is located immediately north of the baggage claim and rental car areas. The 332 ready and 150 return spaces provide a total of 482 ready/return parking spaces. The 11-acre overflow lot provides space for approximately 700 vehicles; shuttle buses transport passengers from the overflow lot to the terminal. **Table 1-5** details existing public and employee parking areas along with approximate parking spaces.

Figure 1-13: Vehicle Parking and Circulation

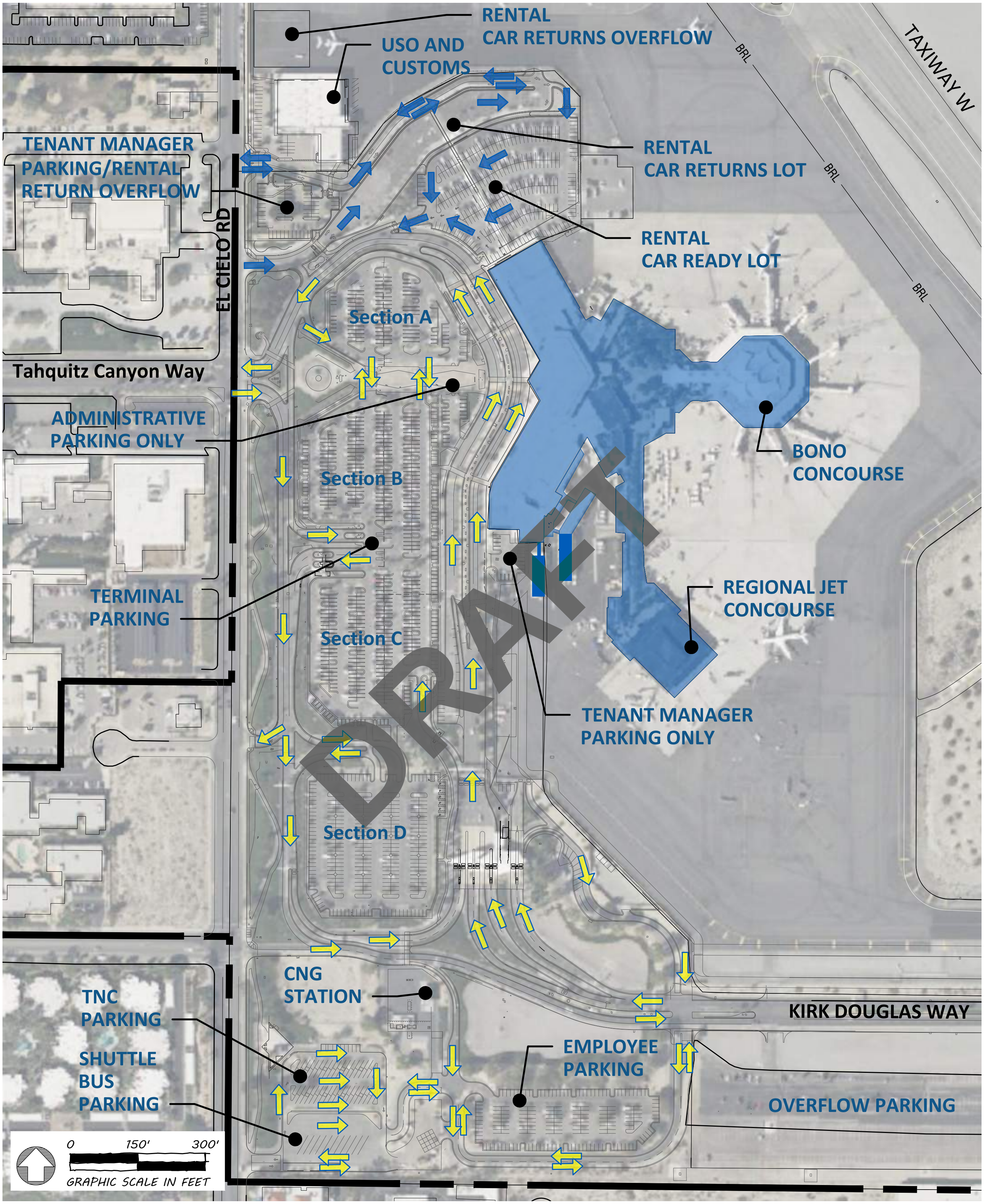
RENTAL CAR RETURNS OVERFLOW
USO AND CUSTOMS
TAXIWAY W
BRL
BRL
BRL
BRL
TENANT MANAGER PARKING/RENTAL RETURN OVERFLOW
RENTAL CAR RETURNS LOT
RENTAL CAR READY LOT
EL CIELO RD
Section A
Tahquitz Canyon Way
ADMINISTRATIVE PARKING ONLY
BONO CONCOURSE
Section B
TERMINAL PARKING
REGIONAL JET CONCOURSE
Section C
TENANT MANAGER PARKING ONLY
Section D
CNG STATION
TNC PARKING
KIRK DOUGLAS WAY
SHUTTLE BUS PARKING
EMPLOYEE PARKING
OVERFLOW PARKING
0
150'
300'
GRAPHIC SCALE IN FEET

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Table 1-5: Parking Areas

Lot	Description/Location (and rate if applicable)	Number of Spaces
Public Parking		
A & B	Main Lot (Maximum $20/day)	377
C & D	Main Lot (Maximum $20/day)	538
Cell Phone	Free	21
Overflow Lot	Maximum $18/day	≈700
Employee/Terminal Tenant Parking		
Tenant Manager	(Immediately south of the terminal)	16
Tenant Manager	(South of the USO[1] building)	≈50
Airport Administration	(Immediately west of the terminal)	17
Employee Parking	(South along Kirk Douglas Way)	176

Source: *Mead & Hunt, 2023.*

Notes: *≈ indicates approximate*

[1] USO – United Services Organizations

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Transit Services

Public Transportation

Several bus stations are within a 15-minute walking distance of the Airport, particularly along East Tahquitz Canyon Way, El Cielo Rd, and Kirk Douglas Way. Public transportation accessible via these stops includes:

- **Sun Transit Agency** – offers bus transportation in the Coachella Valley. Two stops are within three blocks of the airport.
- **Morongo Basin Transportation Authority (MBTA)** – offers transportation to Joshua Tree, Yucca Valley, Twenty-Nine Palms, and the 29 Palms Marine Base. The bus stop is at the north end of the terminal in front of the Rental Cars ready lot.
- **Amtrak** – offers a bus-to-train service from the PSP airport to Fullerton and Los Angeles. The bus stop is at the north end of the terminal in front of the Rental Cars ready lot.

Shuttle/Private Ground Transportation

Many hotels and resorts offer courtesy shuttles to and from the Airport.

Rental Cars

As mentioned earlier, 10 rental car companies are available to arriving passengers (eight on-site and two located off-airport): Alamo, Avis, Budget, Dollar, Enterprise, Hertz, National, and Thrifty are located at PSP, whereas Desert Rent-A-Car and Go Rentals are located off-Airport. Car sharing service companies, such as Turo, may soon be available for PSP travelers.

TNCs/Taxis

Transportation network companies (TNCs), such as Uber and Lyft, provide pick-ups and drop-offs. The following companies provide taxi service:

- City Cab
- Coachella Valley Taxi
- Yellow Cab of the Desert.

Ground Service Equipment

PSP has ground handling providers that store ground service equipment (GSE) on the terminal apron, primarily between the Sonny Bono Concourse and the Regional Jet Concourse. The space between the two concourses that is used to store GSE is roughly 25,000 SF. Each gate is equipped with a jet bridge and between the jet bridges, additional GSE equipment is stored.

Fueling Services

Two fixed based operators (FBOs) provide services at PSP: Signature Flight Support, located near the terminal, and Atlantic Aviation, located on eastside of Runway 13/31. Signature Flight Support provides fueling services to aircraft parked at the terminal. Both Signature Flight and Atlantic Aviation offer 100 low-lead (LL) line service and Jet A line service, along with aircraft parking, maintenance, and additional services.

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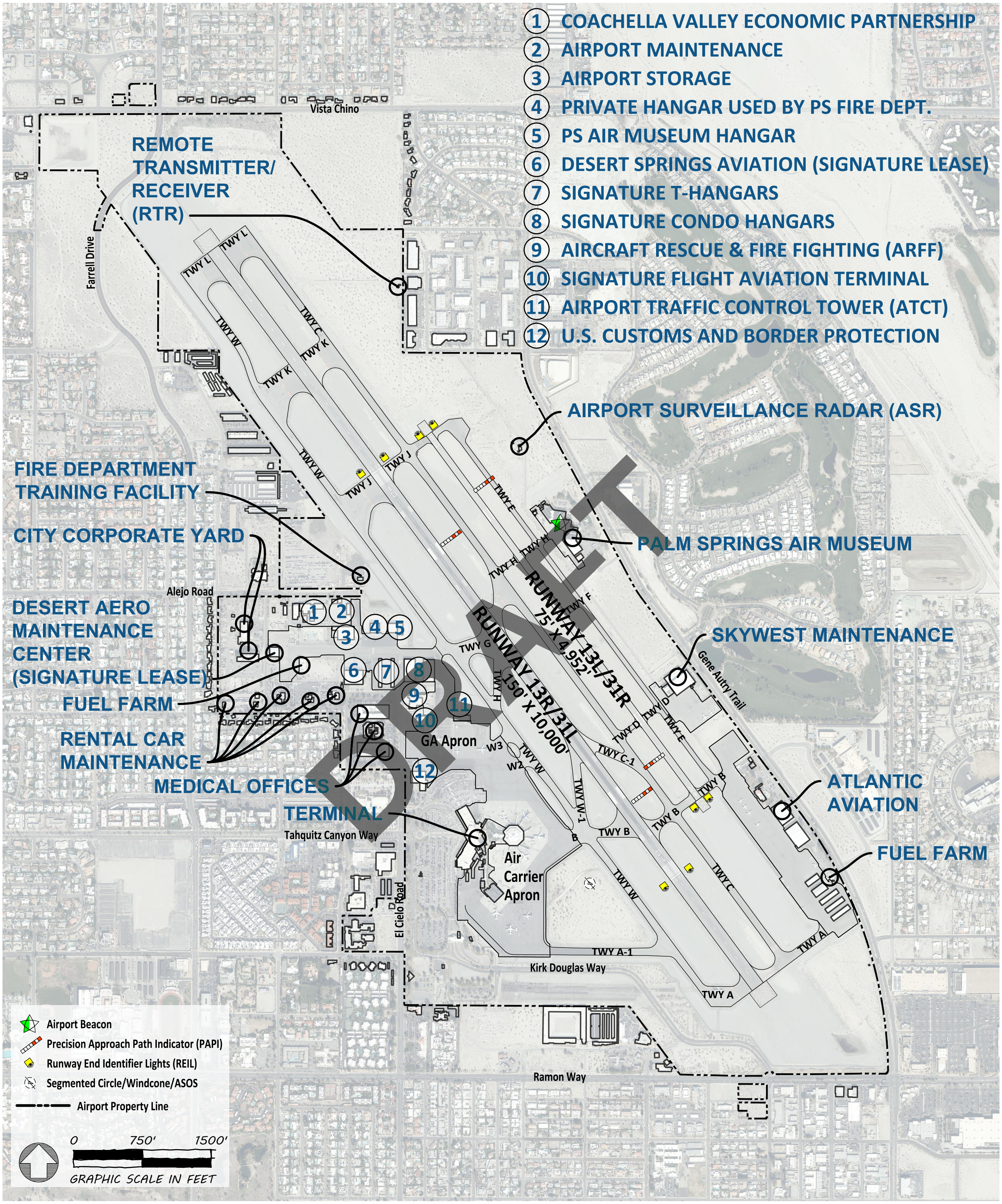
TERMINAL BUILDING CONSTRUCTION AND BUILDING SYSTEMS

When considering future building expansion at PSP, the building code implications of additional expansion of the terminal building need to be considered. To facilitate an expansion, an analysis of the existing building will need to be undertaken to understand the full impact to allowable area expansion of the buildings. Elements that would need study include building type, seismic risk category, fire protection systems, uses within the building, and adjacencies to higher/lower risk uses.

AERONAUTICAL FACILITIES

Aeronautical facilities consist of those areas of the airport that are accessible to aircraft. PSP and the Federal Aviation Administration (FAA) continue to invest in the Airport's facilities to maintain utility and function of the pavement surfaces and supporting infrastructure. **Figure 1-14** shows the aeronautical facilities that directly support aviation activity.

Figure 1-14: Existing Airfield Layout



① COACHELLA VALLEY ECONOMIC PARTNERSHIP
② AIRPORT MAINTENANCE
③ AIRPORT STORAGE
④ PRIVATE HANGAR USED BY PS FIRE DEPT.
⑤ PS AIR MUSEUM HANGAR
⑥ DESERT SPRINGS AVIATION (SIGNATURE LEASE)
⑦ SIGNATURE T-HANGARS
⑧ SIGNATURE CONDO HANGARS
⑨ AIRCRAFT RESCUE & FIRE FIGHTING (ARFF)
⑩ SIGNATURE FLIGHT AVIATION TERMINAL
⑪ AIRPORT TRAFFIC CONTROL TOWER (ATCT)
⑫ U.S. CUSTOMS AND BORDER PROTECTION
Vista Chino
REMOTE TRANSMITTER/ RECEIVER (RTR)
Farrell Drive
TWY L
TWY L
TWY C
TWY K
TWY K
TWY W
TWY W
TWY J
TWY J
AIRPORT SURVEILLANCE RADAR (ASR)
FIRE DEPARTMENT TRAINING FACILITY
CITY CORPORATE YARD
TWY E
TWY H
TWY H
PALM SPRINGS AIR MUSEUM
Alejo Road
DESERT AERO MAINTENANCE CENTER (SIGNATURE LEASE)
TWY F
RUNWAY 13L/31R
75' X 4,952'
RUNWAY 13R/31L
150' X 10,000'
TWY G
TWY H
SKYWEST MAINTENANCE
Gene Autry Trail
FUEL FARM
RENTAL CAR MAINTENANCE
MEDICAL OFFICES
GA Apron
W3
W2
TWY W
TWY D
TWY D
TWY E
TWY C-1
TWY B
TWY B
TWY W-1
B
TWY B
TERMINAL
Tahquitz Canyon Way
ATLANTIC AVIATION
FUEL FARM
Air Carrier Apron
El Cielo Road
TWY W
TWY C
TWY A-1
TWY A
Kirk Douglas Way
TWY A
Ramon Way
Airport Beacon
Precision Approach Path Indicator (PAPI)
Runway End Identifier Lights (REIL)
Segmented Circle/Windcone/ASOS
Airport Property Line
0
750'
1500'
GRAPHIC SCALE IN FEET

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Runway System

PSP has two parallel runways: Runway 13R/31L (primary runway) and Runway 13L/31R (additional runway). Aircraft use Runway 13R/31L to conduct commercial operations and large general aviation operations. Small general aviation aircraft use Runway 13L/31R. **Table 1-6** summarizes runway characteristics.

Table 1-6: Runway Characteristics

Item	Runway 13R/31L (Primary)		Runway 13L/31R (Additional)	
	13R	31L	13L	31R
Runway Design				
Length	10,000’		4,952’	
Width	150’		75’	
Shoulder Width	40’		20’	
Blast Pad Width	230’		140’	
Blast Pad Length	200’		200’	
Displaced Threshold	3,000’	1,500’	N/A	N/A
Pavement Type & Strength				
Pavement Type	Asphalt		Asphalt	
Weight Bearing Capacity (Single)	105,000 lbs.		12,500 lbs.	
Weight Bearing Capacity (Double)	200,000 lbs.		60,000 lbs.	
Double Tandem	330,000 lbs.		N/A	
Dual Double Tandem	800,000 lbs.		N/A	
Runway Lighting				
REIL	Yes	Yes	Yes	Yes
Visual Approach Path Guidance	PAPI	PAPI	PAPI	PAPI
Runway Edge Lights	HIRL		MIRL	

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Sources: *FAA Airport Data and Information Portal (ADIP), 2023; NV5 AGIS Survey, 2023.*

Notes:

[1] *REIL – Runway Edge Identifier Lights.*

[2] *PAPI – Precision Approach Path Indicator.*

[3] *HIRL – High Intensity Runway Lights.*

[4] *MIRL – Medium Intensity Runway Lights.*

Taxiway System

The runways at PSP are supported by a taxiway system consisting of full parallel taxiways, entrance and exit taxiways, and various taxiway connectors. **Table 1-7** summarizes each taxiway’s characteristics.

Table 1-7: Taxiway Characteristics

Taxiway Segment	Width (feet)	Shoulder (feet)
A	90-190	25
A1	75	25
B	75-150	25
C	75	25
C1	75	25
D	50	12
E	50	12
F	50	12
G	165	35
H	85-215	12-35
J	50-300	25
K	300	25
L	300	25
W	75	35
W1	75	35
W2	125	35
W3	130	35

Sources: *NV5 Survey, 2023.*

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NAVAIDs and Airspace Classification

Navigational aids (NAVAIDs), which can be airborne or located on the ground and either visual or electronic, provide guidance and positional information to aircraft. NAVAIDs include ground-based electronic and visual systems and space-based global positioning system (GPS) satellites. Electronic NAVAIDs can transmit information to aircraft systems and allow pilots to navigate and operate in weather that reduces visibility. Visual NAVAIDS assist pilots with airport location, runway orientation, approach, and navigating in the terminal environment under visual conditions. The FAA is implementing a modern air traffic control and management system called NextGen to decrease delay and increase capacity. NextGen uses GPS satellites rather than ground-based radio NAVAIDs.

Visual NAVAIDS

Visual NAVAIDs include visual lights and wind indicators. PSP's visual NAVAIDs and listed in **Table 1-8**.

Table 1-8: Visual NAVAIDs

Type	Description
Airport Beacon	Assists pilots with locating an airport at night or times of low visibility.
PAPI	Assists pilots with their approaches by visually indicating whether they are approaching too high or too low.
REIL	Assists pilots with identifying the runway end.
Segmented Circle and Wind Cones	Visual indicators that inform a pilot on traffic patterns.

Electronic NAVAIDS

Reliance on sight limits the utility of visual NAVAIDs when visibility is poor. Electronic NAVAIDs require instruments onboard the aircraft and help pilots navigate, take off, and land when it is not possible to do so through visual cues alone. Electronic NAVAIDs include ground-based facilities and satellites that use GPS. NAVAIDs can be used during all flight conditions; however, they must be used when visibility and cloud ceilings are low enough to be considered instrument meteorological conditions (IMC).

Table 1-9 lists the types of electronic NAVAIDs available for aircraft flying to and from PSP.

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Table 1-9: Electronic NAVAIDs

Type	ID	Frequency	Distance from PSP
VORTAC	PSP	115.5 MHz	4.5 nm
VORTAC	TRM	116.2 MHz	21.1 nm
VOR	HDF	112.05 MHz	34.1 nm
TACAN	RIV	113.0 MHz	38.7 nm
VORTAC	TNP	114.2 MHz	40.5 nm
VORTAC	JLI	114.0 MHz	41.5 nm
NDB	SB	397.0 MHz	45.0 nm
VOR	RAL	108.6 MHz	47.7 nm
VORTAC	PDZ	112.2 MHz	51.4 nm
TACAN	NFG	111.8 MHz	55.5 nm

Source: *FAA ADIP, 2022.*

Instrument Approach Procedures

Instrument approach procedures (IAPs) consist of a series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight rules (IFR) conditions from the beginning of the initial approach to a landing, or to a point from which the landing can be made visually. IAPs are classified as precision, meaning they have both horizontal and vertical guidance; non-precision, offering only horizontal guidance; and visual procedures that offer no positional guidance. PSP does not have any precision instrument approaches. **Table 1-10** lists the IAPs.

Table 1-10: PSP Instrument Approach Procedures

Approach Type	Runway End	Ceiling Minimums	Visibility Minimums
RNAV (RNP) Y*	31L	304	1 mile
RNAV (RNP) Z*	13R	361	1 ¼ mile
RNAV (GPS) Z	31L	271	1
VOR or GPS-B	Both 13R & 31L – circle to land	1826	1 ¼ mile

Sources: FAA Terminal Procedures Publication PSP.

*Note: *RNP IAPs are special procedures authorized with prior permission by flight crews and aircraft with specific equipment and training.*

Airspace Classification

The FAA administers airspace and classifies it as either "controlled" or "uncontrolled" within any one of six designations. Airspace designated as Class A, B, C, D, and E are controlled airspace, and Class G airspace is uncontrolled. As **Figure 1-15** shows, PSP is located in Class D Surface Airspaces depicted in the Sectional Aeronautical Charts and in Class E airspace during non-towered hours. Sectional Aeronautical Charts are the primary navigational reference medium that pilots use. The aeronautical information on Sectional Charts includes visual and radio aids to navigation, airports, controlled airspace, restricted areas, obstructions, and related data. Charts depict all locations of Class D airspace with bases below 500 feet Mean Sea Level (MSL). In areas where charts do not depict a Class D base, Class D begins at 1,000 feet above MSL.

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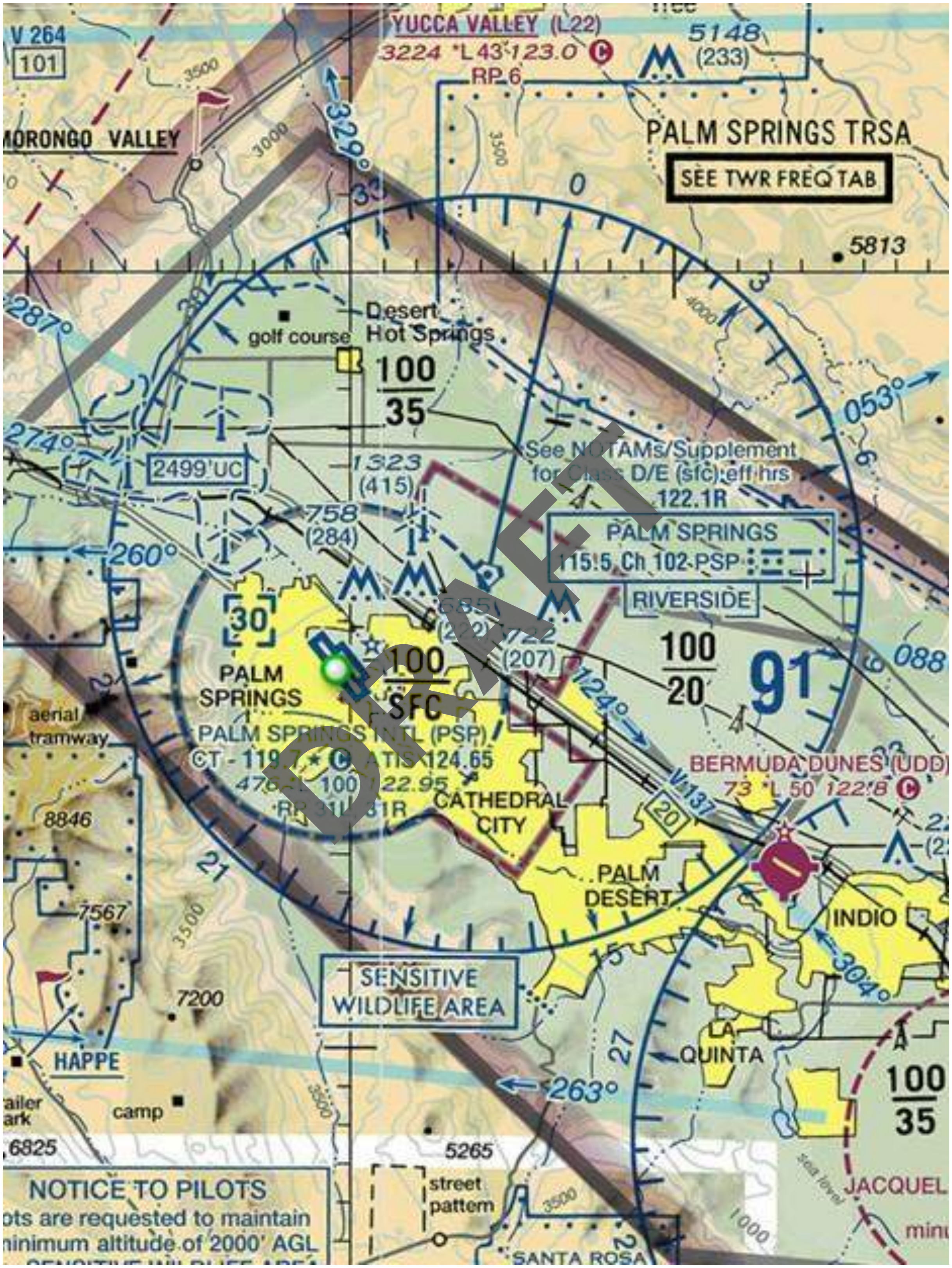
Figure 1-15: Airspace



YUCCA VALLEY (L22)
3224 *L 43 123.0 C
RP 6
5148
(233)
V 264
101
MORONGO VALLEY
PALM SPRINGS TRSA
SEE TWR FREQ TAB
329°
287°
274°
260°
053°
088°
5813
Desert Hot Springs
golf course
100
35
2499' UC
1323
(415)
758
(284)
See NOTAMs/Supplement for Class D/E (sfc) eff hrs
122.1R
PALM SPRINGS
115.5 Ch 102 PSP
RIVERSIDE
685
(222)
722
(207)
30
100
SFC
100
20
91
PALM SPRINGS
aerial tramway
PALM SPRINGS INTL (PSP)
CT - 119.7 ★ C ATIS 124.65
478 L 100 122.95
RP 31L, 31R
CATHEDRAL CITY
124°
V137
20
BERMUDA DUNES (UDD)
73 *L 50 122.8 C
PALM DESERT
INDIO
304°
8846
7567
7200
HAPPE
SENSITIVE WILDLIFE AREA
LA QUINTA
263°
100
35
camp
6825
5265
NOTICE TO PILOTS
ots are requested to maintain
minimum altitude of 2000' AGL
street pattern
SANTA ROSA
JACQUEL
sea level

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ENVIRONMENTAL REVIEW

Understanding the environment on and surrounding PSP allows for efficient planning of future development and aids in compliance with federal and state regulations. Awareness of the surrounding environment also affords the opportunity to understand how PSP affects the environment and neighboring community. This environmental inventory section is not intended to satisfy environmental clearance requirements outlined in FAA Order 1050.1F, Environmental Impacts and Procedures, nor is it intended to fulfill requirements of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). It does provide a baseline condition of environmental resources that are known to occur on or near the terminal area. The intent is to provide an understanding of the potential for environmental impacts associated with airport development alternatives and to consider avoidance and minimization of potential impacts throughout the terminal area planning process.

Air Quality

Air quality analysis for federally funded projects must be prepared in accordance with applicable air quality statutes and regulations, including the Clean Air Act of 1970, the 1977 Clean Air Act Amendments, the 1990 Clean Air Act Amendments, and the National Ambient Air Quality Standards (NAAQS). The air pollutants of concern in the assessment of impacts from airport related sources include six criteria pollutants: carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO2), ozone (O3), particulate matter (PM-10 and PM-2.5), and sulfur dioxide (SO2). Regions are designated as attainment, nonattainment, and maintenance by the Environmental Protection Agency based on the status relative to the NAAQS. Attainment refers to geographic areas that meet the NAAQS, while nonattainment refers to areas that do not meet the NAAQS. Maintenance areas refer to geographic areas that were once nonattainment but have recently achieved compliance with NAAQS.

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Short-term air quality impacts may be expected from heavy equipment pollutant emissions, fugitive dust (small mineral particles from soil) resulting from the movement of earth for cut and fill, any open burning that may occur on the Airport, and the operation of concrete batch plants. Contractors would be required to comply with all local, state, and federal air quality regulations, especially the procedures contained in the FAA's Advisory Circular (AC) 150/5370-10A, *Standards for Specifying Construction of Airports*, which is the FAA guidance to airport sponsors concerning protection of the environment during terminal area construction projects.

Monitors measure and collect ambient air quality at monitoring stations geographically located within the various air basins throughout Southern California. The City of Palm Springs is generally impacted by air contaminants within the geographical boundaries of the South Coast Air Basin, which comprises all of Orange County and the non-desert portions of the counties of San Bernardino, Riverside, and Los Angeles, and the Riverside County portion of the Salton Sea Air Basin.

The City of Palm Springs is in the nonattainment area for ozone, and particulate matter levels exceed federal and/or state established ambient air quality standards. Ozone is primarily produced from vehicular activity. For the Airport, the level of ozone emitted may be reduced by encouraging the use of mass transit, walking, shuttle services, and other alternative-fuel vehicles. The City is also in a nonattainment status for particulate matter because it sits in the Coachella Valley Association of Governments "Blows and Hazard Zone."

Farmland

The Farmland Protection Policy Act (FPPA) regulates federal actions that may impact or convert farmland to a non-agricultural use. FPPA defines farmland as "prime or unique land as determined by the participating state or unit of local government and considered to be of statewide or local importance." Per the Natural Resources Conservation Service Web Soil Survey, the Airport is located in an area designated as "Not Prime Farmland."

Floodplains

Executive Order 11988, Floodplain Management requires federal agencies to "avoid to the extent possible the long-term and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative."

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The Flood Insurance Rate Map (FIRM) is an official map of a community on which the Federal Emergency Management Agency has delineated the Special Flood Hazard Areas, the Base Flood Elevations, and the risk premium zones applicable to the community. An examination of the FIRM for PSP shows that the Airport and surrounding area are located approximately one mile west of the Whitewater River, the primary drainage channel that flows through the Coachella Valley watershed to the Salton Sea. A 100-year floodplain extends onto airport property along the Gene Autry Trail. The FBO Atlantic Aviation is located within the floodplain.

Hazardous Material, Pollution Prevention, and Solid Waste

Federal actions that pertain to the funding or approval of airport projects require the analysis of the potential for environmental impacts per the regulating laws. Furthermore, property listed or considered for the National Priority List should be evaluated in relation to the Airport's location. There are no known hazardous waste sites on-airport property.

Construction activities can generate hazardous wastes and some construction materials constitute hazardous substances. These include fuel, oil, lubricants, paints, solvents, concrete-curing compounds, fertilizers, herbicides, and pesticides. Proper practices should be implemented to prevent or minimize the potential for these hazardous substances to be released into the environment. Chemicals, petroleum-based products, and waste materials, including solid and liquid waste, should be stored in areas specifically designed to prevent discharge into storm water runoff. Areas used for storage of toxic materials should be designed with full enclosure in mind, such as the establishment of a dike around the perimeter of the storage area. Construction equipment maintenance should be performed in a designated area and control measures, such as drip pans to contain petroleum products, should be implemented. Spills should be cleaned up immediately and disposed of properly.

Historic, Architectural, Archeological, and Cultural Resources

Historical, architectural, archeological, and cultural resources encompass a range of sites, properties, and physical resources associated with human activities, society, and cultural institutions. Federal law requires project sponsors who require federal funds or approvals to consider how their proposed projects would affect historic properties. In accordance with NEPA and Section 106 of the National Historic Preservation Act, the FAA is the lead agency for identifying the potential impacts of a proposed project on these resources and consulting with the federally recognized tribes, the State Historic Preservation Office and other agencies, as necessary.

The Palm Springs Municipal Terminal is listed in the National Park Service's National Register of Historic Places (NRHP or National Register). Three other NRHP-listed properties are in the vicinity of the Airport: Palm Springs City Hall (0.3 miles west), Palm Springs Desert Museum (0.1 east), Palm Springs Tramway Valley Station (9.0 miles west), and Palm Springs Unified School District Educational Administrative Center (0.2 miles east).

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Character-defining elements of the entire terminal building include the interior elements of the lobby, original natural rock walls, and landscape features that are confined within the central core and four wings of the building. There is a site that contains two-diamond shaped lawns, four tree islands, a fountain, and original parking areas. These elements contribute to retaining the historical integrity and significance of the terminal at PSP by meeting the criteria in Sections A and C of the National Register.

Threatened and Endangered Species

The Endangered Species Act, as Amended, requires each federal agency to ensure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of habitat of such species. According to the U.S. Department of the Interior Fish and Wildlife Service, Information for Planning and Consultation website, there are several threatened and endangered species that may occur in proximity to the Airport; however, due to the active nature of the terminal area, lack of standing water, and proximity to active aircraft, it is unlikely that these species exist in the terminal area. The Peninsular Bighorn Sheep (Ovis Canadensis Nelsoni) – Endangered, Least Bell's Vireo (Vireo Bellii Pusillus) – Endangered, and Southwestern Willow Flycatcher (Empidonax Traillii Extimus) – Endangered are animal species that have the potential to be found in the airport vicinity. The Coachella Valley Fringe-toed Lizard (Uma Inornata) – Threatened, Desert Tortoise (Gopherus Agassizii) – Threatened, and Mountain Yellow-legged Frong (Rana Muscosa) – Endangered are the potential reptiles and amphibians that could be found within the airport vicinity. The Monarch Butterfly (*Danaus plexippus* – Candidate) has potential to occur in the terminal area. There are no critical habitats in the terminal area. In general, the PSP property does not provide suitable habitat for any potential threatened or endangered species.

Section 4(f) Property

According to Section 4(f) of the Department of Transportation Act (recodified as 49 United States Code [USC], Subtitle I, Section 303), no publicly owned park, recreation area, wildlife or waterfowl refuge, or land of historic site that is of national, state, or local significance shall be used, acquired, or affected by programs or projects requiring federal assistance for implementation unless there is no feasible or prudent alternative. The closest 4(f) properties include numerous parks and NRHP-listed properties in the City of Palm Springs.

Water Quality

The Clean Water Act (CWA) establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. Water quality considerations related to airport development often include increased surface runoff and erosion, and pollution from fuel, oil, solvents, and deicing fluids.

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Due to the desert environment in Palm Springs, managing water demand is essential. Groundwater demand today exceeds the amount of water that is recharged from surface runoff from the surrounding mountains and inflow from the Whitewater River. However, through a contract with the Metropolitan Water District of Southern California, additional water is obtained from the Colorado River. Water demand strategies to consider may include recycling stormwater.

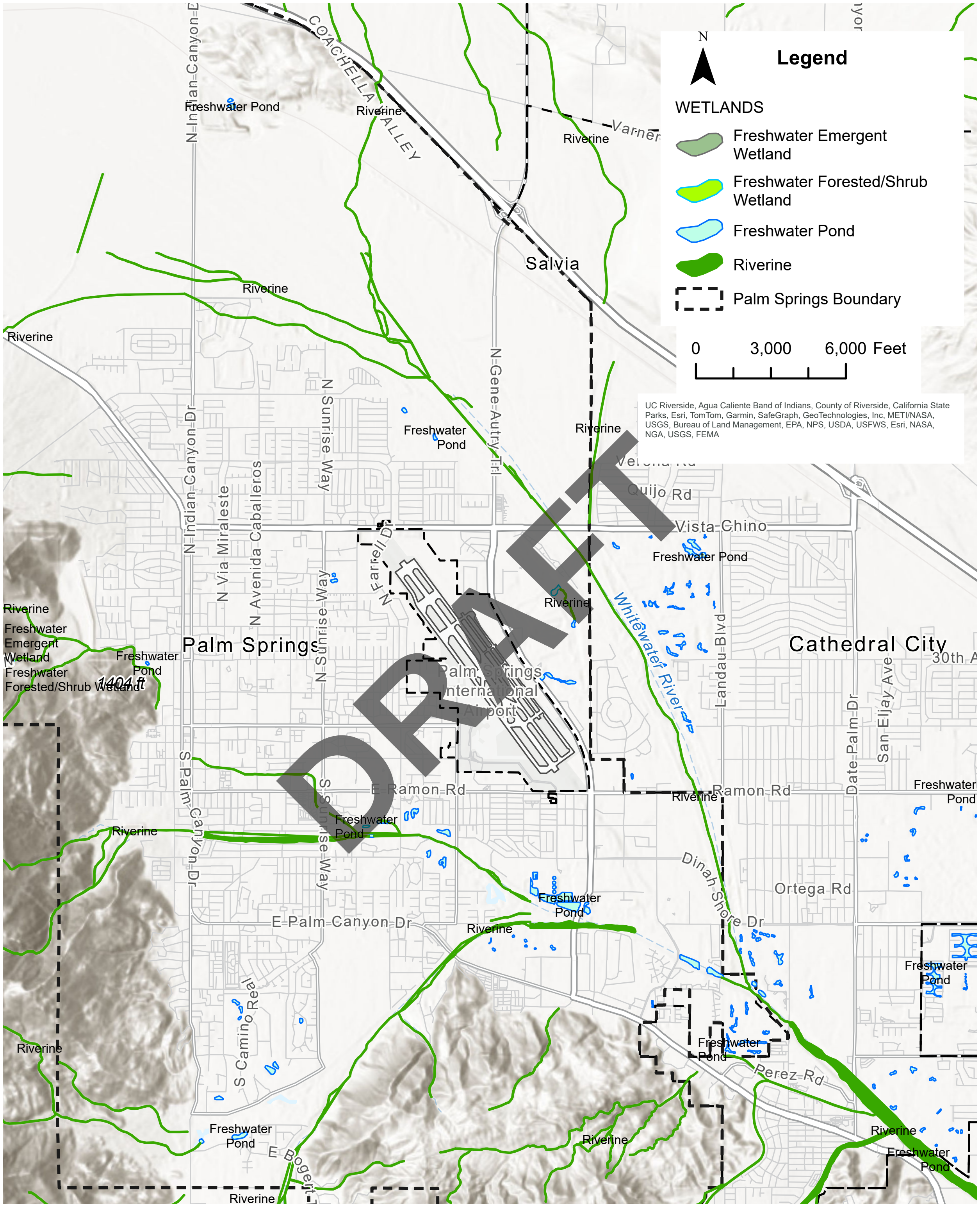
Stormwater runoff generally flows to the southeast, toward the intersection of Gene Autry Trail and Ramon Road before flowing east to the Whitewater River via a storm drain. Although storms are infrequent at Palm Springs, when the top water in the vicinity of the Airport is disturbed, surface water drainage is likely to cause erosion to unprotected areas, impacting surface water quality.

Wetlands

The CWA defines wetlands as “areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.” Wetlands are typically found in swamps, marshes, bogs, and similar areas. Federal regulations require that proposed actions avoid, to the greatest extent possible, long-term and short-term impacts to wetlands, including the destruction and altering of the functions and values of wetlands.

According to the National Wetlands Inventory maps maintained by the U.S. Fish and Wildlife Service, there are no wetlands depicted on-airport property, as illustrated in **Figure 1-16**.

Figure 1-16 Wetlands


N
Legend
WETLANDS
Freshwater Emergent Wetland
Freshwater Forested/Shrub Wetland
Freshwater Pond
Riverine
Palm Springs Boundary
0
3,000
6,000 Feet
COACHELLA VALLEY
Varner
Salvia
Palm Springs
Cathedral City
Palm Springs International Airport
Whitewater River
N Indian Canyon Dr
N Via Miraleste
N Avenida Caballeros
N Sunrise Way
N Farrell Dr
N Gene Autry Trl
Verona Rd
Quijo Rd
Vista Chino
Landau Blvd
Date Palm Dr
San Eljay Ave
30th A
E Ramon Rd
Ramon Rd
S Palm Canyon Dr
S Sunrise Way
E Palm Canyon Dr
Dinah Shore Dr
Ortega Rd
Perez Rd
S Camino Real
E Bogert
1404 ft
Freshwater Pond
Riverine
Freshwater Emergent Wetland
Freshwater Forested/Shrub Wetland
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UC Riverside, Agua Caliente Band of Indians, County of Riverside, California State Parks, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USDA, USFWS, Esri, NASA, NGA, USGS, FEMA

AIRPORT CLIMATE DATA

Weather conditions impact aircraft performance and influence airport design. Consideration is given to temperature, precipitation, visibility, and cloud ceiling heights. Wind patterns are an important meteorological factor in assessing runway utilization and for determining runway design requirements in accordance with FAA aircraft category standards. The historical pattern of prevailing winds influences desirable runway orientation and runway usage. The FAA has determined that crosswinds pose a hazard to safe operations of aircraft, particularly to small and light aircraft; therefore, an airport's main runway should be aligned with the prevailing wind.

Wind coverage is the average percentage of time that a runway or grouping of runways is not subjected to crosswinds of magnitude greater than the allowable crosswind component for each runway. The FAA defines the desirable minimum wind coverage of an airport's runway configuration as 95 percent of wind velocity and direction observations over the most recent 10-year period. **Table 1-11** shows the allowable crosswind component used to compute the wind coverage for a given runway based on the Runway Design Code (RDC) of the critical design aircraft expected to use the runway.

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Table 1-11: Crosswind Components

RDC	Allowable Crosswind Component
A-1 and B-I	10.5 knots
A-II and B-II	13 knots
A-III, B-III, C-I through D-III, D-I through D-III	16 knots
A-IV and B-IV, C-IV through C-VI, D-IV through D-VI	20 knots
E-I through E-VI	20 knots

Source: *FAA AC 150/5300-13B, Airport Design.*

The National Oceanic and Atmospheric Administration (NOAA) collects wind data through an Automated Weather Observing System at PSP. NOAA groups the wind data from 2013 to 2022 for three ceiling and visibility categories presented in **Table 1-12**.

Table 1-12: Ceiling and Visibility Categories

Wind Coverage	Definition
All Weather	All wind observations.
Instrument Flight Rules (IFR)	Cloud ceiling less than 1,000 feet and/or visibility less than 3 miles, but cloud ceiling greater or equal to 200 feet and visibility greater than or equal to 0.5 miles.
Visual Flight Rules (VFR)	Cloud ceiling greater than or equal to 1,000 feet and visibility greater than or equal to 3 miles.

Source: *FAA Safety Handbook.*

The FAA's Wind Analysis tool is used to determine the wind coverage for PSP's runway orientation. **Table 1-13** shows the wind coverage data for the years 2013 to 2022.

Table 1-13: PSP Crosswind Coverages

Runway	10.5 Knots	13 Knots	16 Knots	20 Knots
All Weather				
Runway 13/31	98.89%	99.49%	99.85%	99.96%
Instrument Flight Rules (IFR)				
Runway 13/31	90.44%	93.84%	96.62%	98.43%
Visual Flight Rules (VFR)				
Runway 13/31	98.94%	99.53%	99.87%	98.43%

Source: *NOAA; FAA ADIP.*

Note*:* *Crossway component computed using Runway True Bearings (13/31: 143 true heading), and (31/13: 323 true heading).*

LAND USE

Figure 1-17 depicts the land use types surrounding PSP. The parcels up against the western and northern portions of the Airport property line are predominately residential. The parcels up against the southern, northwestern, and eastern portions along the Airport property line are predominately industrial. The parcel along the southeastern portion of the Airport property line is predominately commercial. The land use compatibility with each of these land use types is discussed further in the **Airfield and Landside Facility Requirements** chapter.

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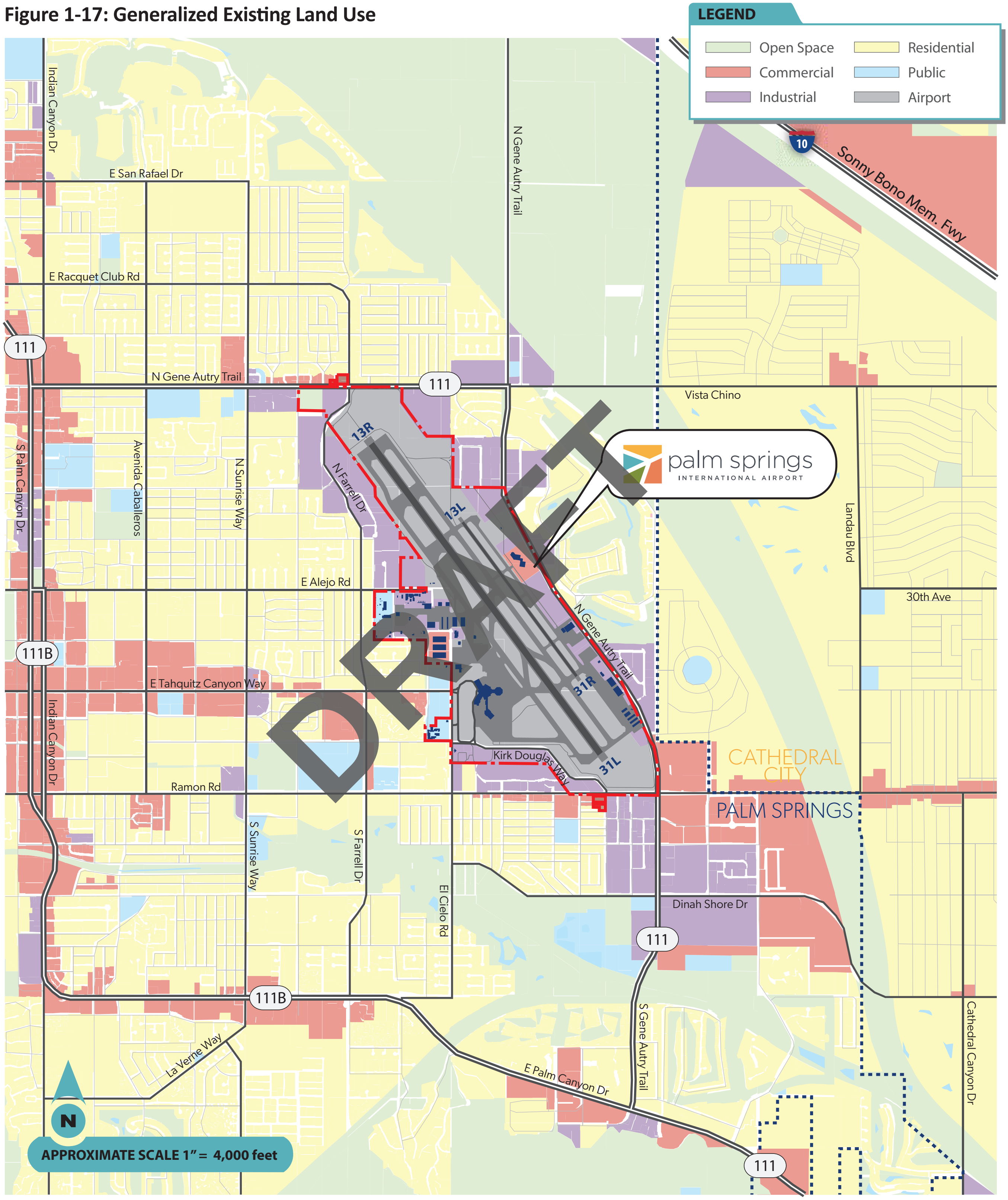
SUMMARY

The goal of this chapter is to provide background information pertaining to the existing facilities at PSP. Information presented in this chapter will be referenced in later chapters. The next steps in the airport master planning process are assessing the aviation activity and demands expected to be placed on the facility over the 20-year planning period and evaluating the ability of existing facilities to accommodate this demand.

Figure 1-17: Generalized Existing Land Use


LEGEND
Open Space
Commercial
Industrial
Residential
Public
Airport
10
Sonny Bono Mem. Fwy
Indian Canyon Dr
E San Rafael Dr
N Gene Autry Trail
E Racquet Club Rd
111
N Gene Autry Trail
111
Vista Chino
13R
S Palm Canyon Dr
Avenida Caballeros
N Sunrise Way
N Farrell Dr
13L
palm springs
INTERNATIONAL AIRPORT
Landau Blvd
E Alejo Rd
30th Ave
N Gene Autry Trail
111B
E Tahquitz Canyon Way
31R
Indian Canyon Dr
31L
Kirk Douglas Way
CATHEDRAL CITY
Ramon Rd
PALM SPRINGS
S Sunrise Way
S Farrell Dr
El Cielo Rd
Dinah Shore Dr
111
111B
S Gene Autry Trail
Cathedral Canyon Dr
La Verne Way
E Palm Canyon Dr
N
APPROXIMATE SCALE 1" = 4,000 feet
111

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Chapter 2 – Aviation Activity Forecast

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OVERVIEW

Growth in aviation activity drives airport development needs and plans. This chapter provides forecasts of unconstrained demand for aviation services at Palm Springs International Airport (PSP or the Airport) for 20 years from 2023 through 2042, on a calendar year basis unless stated otherwise. This chapter focuses primarily on commercial passenger traffic and airline operations, as they place the greatest demand on facilities at the Airport, particularly on the terminal and related facilities. The forecasts encompass commercial passenger enplanements, aircraft operations, and corresponding peak period activity profiles, to guide planning for the future development of the terminal and other facilities at the Airport. In addition, the chapter provides forecasts of belly cargo, as well as noncommercial general aviation and military aircraft operations to cover all aviation activities at the Airport.

Forecast development is a comprehensive process that involves understanding the regional and macroeconomic context, the historical trends in aviation activity at the Airport, and how regional and macroeconomic factors shape aviation activity trends at the Airport. **Appendix A** provides a detailed assessment of relevant demographic and economic indicators at the regional and national levels, while **Appendix B** identifies sources of forecast risk and uncertainty. This chapter begins with an analysis of historical commercial passenger traffic trends at the Airport, which informs forecast development and provides context for the resulting forecasts of commercial passenger aviation activity.

Forecast development involves using various quantitative methods and data sources to analyze different types and measures of aviation activity, also explained in this chapter. Although quantitative methods provide a systematic and replicable framework for developing quantitative forecasts, every step involves qualitative assessment and professional judgment, drawing insights from the analyses of the Airport's regional and macroeconomic environment, trends in aviation activity at the Airport, and trends in the aviation industry.

HISTORICAL COMMERCIAL AVIATION ACTIVITY

In this section, we examine past commercial aviation activity at PSP, which mainly involves scheduled passenger carriers. There are no all-cargo carriers at the Airport. However, scheduled passenger carriers transport some belly cargo. We analyze historical data available through 2022 and present annual data on a calendar-year basis, unless stated otherwise.

Operating Airline History

According to airline schedules accessed as of March 6, 2023, there are 12 passenger carriers with scheduled service at PSP through 2023. Since 2018, PSP has lost two service providers: Frontier Airlines in 2021 and Virgin America in 2018 (Alaska Airlines acquired Virgin America). Additionally, five other airlines—mostly smaller and low-cost—have come and gone, each lasting one to two years at the Airport. These five airlines include Boutique (2020-2021), Contour (2019-2020), Corporate Flight Management (2019), ExpressJet (2022), and Swoop (2021-2022). Two airlines entered the PSP market during the COVID-19 pandemic and continue to serve the Airport: Southwest in 2020 and Avelo in 2022. Southwest's entry was likely due to the airline's opportunistic strategy during the COVID-19 pandemic to spread out its services to mitigate the negative impact of the pandemic.

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Several major airlines, including Alaska, American, Delta, Southwest, United, and WestJet, operate year-round flights at the Airport. However, Air Canada, Flair, Sun Country, Allegiant, and JetBlue do not operate during the summer season. In 2022, Air Canada and Flair did not operate from May to September, Allegiant and JetBlue did not operate from June to September, and Sun Country did not operate from June to August.[1] All five airlines mentioned above resumed flights toward the end of the year. **Table 2-1** shows the passenger carriers that provide scheduled service at PSP.

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[1] OAG Schedules Analyzer, last accessed April 14, 2023.

Table 2-1: Carriers with Scheduled Service at PSP, by Calendar Year

Airlines	2018	2019	2020	2021	2022	2023
Air Canada	•	•	•	•	•	•
Alaska Airlines	•	•	•	•	•	•
Allegiant Air LLC	•	•	•	•	•	•
American Airlines	•	•	•	•	•	•
Avelo Airlines					•	•
Delta Air Lines	•	•	•	•	•	•
Flair Airlines	•	•		•	•	•
JetBlue Airways	•	•	•	•	•	•
Southwest Airlines			•	•	•	•
Sun Country Airlines	•	•	•	•	•	•
United Airlines	•	•	•	•	•	•
Westjet	•	•	•	•	•	•
Former PSP Service Providers						
Boutique Air			•	•		
Contour Airlines		•	•			
Corporate Flight Management		•				
ExpressJet Airlines, Inc.					•	
Frontier Airlines Inc.	•	•	•	•		
Swoop				•	•	
Virgin America	•					

Source: *OAG Schedules Analyzer, last accessed on March 6, 2023.*

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HISTORICAL ENPLANEMENT TRENDS

Fundamentally passenger traffic is driven by changes in the U.S. economic cycle—the demand for air travel grows during periods of economic expansion and declines during periods of economic recession. Passenger traffic is also affected by significant changes in airline network strategies and one-off events such as the 2001 terrorist attacks, which took place during the 2001 U.S. economic recession, and the ongoing COVID-19 pandemic, which caused the 2020 economic recession. Smaller airports tend to be vulnerable to changes in airline service.

Significant Developments Affecting the U.S. Airline Industry

The U.S. aviation industry enjoyed several periods of rapid expansion, including the 1980s following the federal deregulation of the industry and the 1990s during a decade-long economic boom. Nevertheless, the long-running U.S. economic expansion ended abruptly with the bursting of the dot-com bubble in 2001. Since then, additional adverse events have prompted significant structural changes that continue to shape the industry today.

The terrorist attacks on September 11, 2001, caused a significant decrease in air travel demand for several months. U.S. airlines, especially American Airlines and United Airlines, suffered significant financial losses. Airport security measures were strengthened to prevent future attacks, resulting in longer passenger screening times. This discouraged air travel especially for short-haul destinations that could be reached by ground transportation. To attract passengers, airlines lowered airfares, and both leisure and business travelers became increasingly price sensitive. The internet also made it easier to search and compare airfares.

Meanwhile, airlines faced rising fuel costs. Jet fuel prices quadrupled from 2000 to 2008, remaining at record-high levels through 2014. Amid record fuel prices, the U.S. economy entered the Great Recession from December 2007 to June 2009—the most drawn-out U.S. economic recession since the Great Depression. The recession spread globally and weakened air travel demand. Because of the significant and negative labor market impacts of the recession, including large declines in household income, the ensuing economic and air travel recovery was slow.

Mounting financial difficulties resulting from high fuel costs and weak demand during the Great Recession led to airline bankruptcies and mergers, leaving four major airlines—American, Delta, Southwest, and United—controlling 80 percent of the U.S. domestic passenger traffic. Surviving airlines responded with various cost-cutting measures. They retired old aircraft, acquired larger and more fuel-efficient aircraft, and added seats to existing aircraft. They transferred routes between mainline and regional service to match the supply of seats with demand better. They changed their route networks to maximize profits, moving flights from less to more profitable markets. To increase profitability, they not only changed pricing structures to increase revenue, but they also made deliberate cuts to flight schedules to increase load factors and improve aircraft utilization—a business strategy that has become known as the U.S. airline industry capacity rationalization, and said cuts fell disproportionately on small- and medium-hub airports.

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Although the U.S. economic recovery from the Great Recession was slow, it spurred the longest U.S. economic expansion on record. As air travel demand returned, the U.S. airline industry began earning profits in 2010 and sustained those profits for more than ten years. In late 2014, jet fuel prices began to fall, allowing airlines to boost profits, renew fleets, and increase flight schedules while maintaining capacity discipline. As the economy continued to expand, nationwide air traffic growth accelerated in the last quarter of the decade, despite adverse shocks to the industry, including the grounding of the Boeing 737 MAX, a recent addition to the commercial passenger aircraft fleet.

In 2020, COVID-19 infections emerged, and the spread of the virus was declared a global pandemic on March 11, 2020. As a result, air travel came to a near halt, and U.S. airport passenger traffic plummeted nearly 97 percent in mid-April 2020. The pandemic significant impacted air travel, inducing structural changes in both the demand for air travel and the supply of airline passenger service that may have long-lasting effects on the airline industry.

Unlike the experience following previous shocks, the recovery of business travel from the pandemic has been slower than the recovery of leisure travel for holidays, vacations, and visiting friends and relatives. Factors delaying business travel recovery include:

- The widespread adoption of virtual conferencing.
- The delay in the workers' return to offices.
- The possible permanent transition to remote work and hybrid work practices.

International travel was suspended for an extended period and continued to be depressed by travel restrictions that remained in place to varying degrees in certain countries. Slow recovery in business and international travel slowed passenger traffic recovery at most airports.

In response to the sharp decrease in air travel demand at the onset of the pandemic, airlines reduced capacity by retiring older aircraft models and postponing the delivery of new ones. They also shrank their workforce by creating voluntary retirement and extended leave incentives. Then, as air travel demand rebounded, airlines began restoring flights. However, as recovery progressed, the constraint shifted to the supply side: fleet constraints, delays in new aircraft deliveries, and labor shortages limited airlines' capacity to meet returning demand.

Unlike the aftermath of the Great Recession, consumers recovered strongly from the deep but brief recession caused by the COVID-induced economic lockdowns and stay-at-home orders. The job market also rebounded strongly: Today, unemployment is historically low, and job openings outnumber those looking for jobs. Households emerged, on average, with relatively healthy finances and the ability to spend on the pent-up demand for travel. With COVID-19 infections slowing down, international travel has been gradually returning as pandemic-related restrictions get lifted, including China's three-year-long border restrictions and closure to foreign visitors, which has reopened as of March 2023. However, international travel recovery is hampered instead by geopolitical reasons, including the ongoing war between Russia and Ukraine that began in early 2022.

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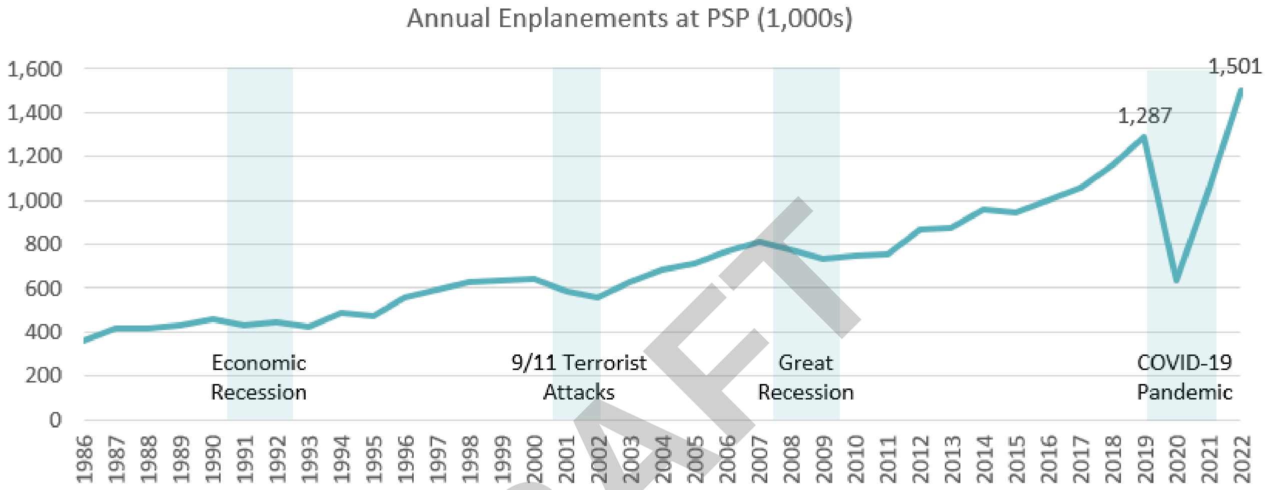
Historical Long-Term Enplanement Trends at PSP

Figure 2-1 shows PSP's long-term enplanement history from 1986 through 2022. Despite experiencing several economic recessions between 1986 and 2022, passenger traffic at PSP exhibited strong growth, growing by a 2.7 percent compound annual growth rate (CAGR). Since 2002, passenger traffic growth has accelerated to a 5.1 percent CAGR from 2002 through 2022. During this period of accelerated growth, PSP experienced one period of significant decline in air traffic: the 2008-2009 Great Recession, which led to a 9.0 percent decrease from 807,706 enplanements in 2007 to 734,908 enplanements in 2009. However, the entries and re-entries of new airlines—Air Canada (in 2015), Frontier (in 2012 and again in 2018), and JetBlue (in 2016)—contributed to a 36.3 percent increase in air traffic between 2015 and 2019, as air traffic rose from 944,625 enplanements to 1.3 million.

In 2020, the COVID-19 pandemic halted the Airport's upward momentum. As a result of a nationwide suspension of air travel and other lockdown efforts attempting to contain the spread of COVID-19, PSP's enplanements fell 50.9 percent down to about 632,000 enplanements in 2020. Passenger traffic has not reached such a low level since 2003, and 2020 easily marked the largest single decline in the Airport's history.

However, the next two years brought PSP's fastest recovery, helped along by the widespread distribution of COVID-19 vaccinations. As of 2022, the Airport reached 1.5 million enplanements, surpassing its pre-pandemic 2019 peak of 1.3 million.

Figure 2-1: Annual Enplanements at PSP



Source: *Airport records.*

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Comparison With U.S. System Enplanement Trends

From 2002 to 2022, PSP consistently exceeded the U.S. system growth trends. In particular, PSP experienced significantly higher year-over-year growth in 2003, 2006, 2012, 2014, 2018, and 2019. In 2012, PSP recorded its highest annual pre-pandemic growth, with enplanements rising 14.3 percent while the national trend only grew by 1.4 percent.

Even though PSP remains classified as a small hub by the Federal Aviation Administration (FAA), its faster growth relative to national trend is reflected in its growing share of total U.S. enplanements. Its market share doubled from 0.08 percent in 2002 to 0.16 percent in 2022.[2] Much of the growth of PSP's market share occurred during the height of the COVID-19 pandemic in 2020. Although both PSP and the U.S. system experienced significant decline in 2020, PSP's decrease was smaller (50.9 percent versus the U.S. system's 62.1 percent), leading PSP's share size to grow from 0.12 percent in 2019 to 0.16 percent in just one year.

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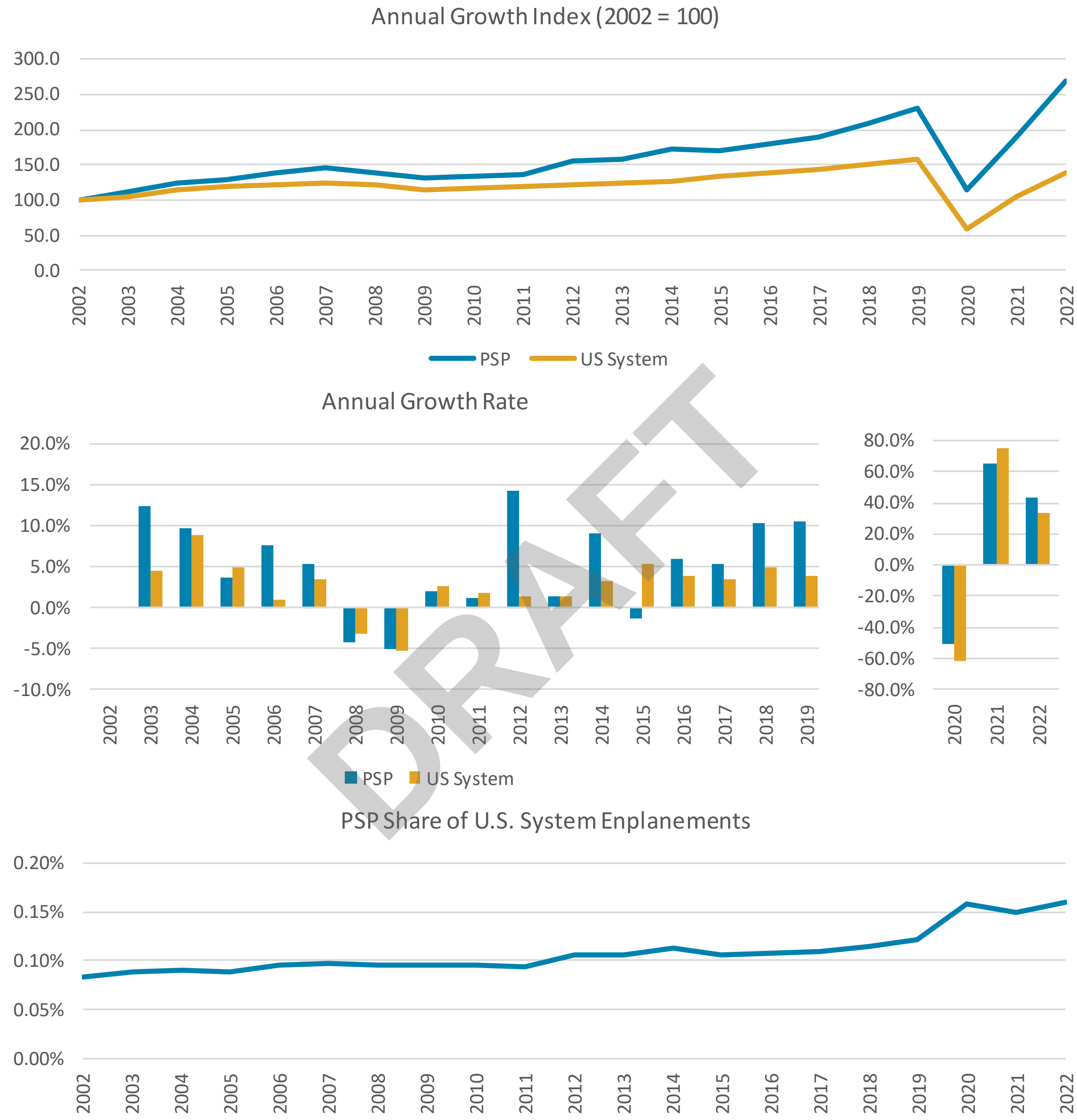
[2] FAA defines a small hub as an airport enplaning between 0.05 to 0.25 percent of total U.S. enplanements.

Figure 2-2 compares the enplanement growth trends of PSP with that of the larger nationwide aviation system.

Figure 2-2: PSP vs. U.S. System Enplanement Growth Trends



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Sources: *Airport records for PSP and Bureau of Transportation Statistics for U.S. system.*

Table 2-2 shows the underlying data for the comparison and analysis of PSP versus U.S. system enplanements.

Table 2-2: PSP vs. U.S. Annual Enplanements

Year	PSP		US System		PSP Share of U.S.
	EP (1000s)	AGR	EP (1000s)	AGR	
2002	557		670,604		0.08%
2003	626	12.4%	700,864	4.5%	0.09%
2004	686	9.6%	763,710	9.0%	0.09%
2005	712	3.7%	800,850	4.9%	0.09%
2006	767	7.7%	808,103	0.9%	0.09%
2007	808	5.4%	835,510	3.4%	0.10%
2008	774	-4.2%	809,822	-3.1%	0.10%
2009	735	-5.0%	767,817	-5.2%	0.10%
2010	750	2.0%	787,478	2.6%	0.10%
2011	758	1.1%	802,135	1.9%	0.09%
2012	866	14.3%	813,123	1.4%	0.11%
2013	877	1.3%	825,322	1.5%	0.11%
2014	957	9.1%	851,850	3.2%	0.11%
2015	945	-1.3%	896,632	5.3%	0.11%
2016	1,002	6.1%	931,989	3.9%	0.11%
2017	1,055	5.3%	964,765	3.5%	0.11%
2018	1,164	10.4%	1,013,213	5.0%	0.11%
2019	1,287	10.6%	1,052,981	3.9%	0.12%
2020	632	-50.9%	398,655	-62.1%	0.16%
2021	1,048	65.7%	700,560	75.7%	0.15%
2022	1,501	43.2%	935,445	33.5%	0.16%
Compound Annual Growth Rate					
2002-2010	3.8%		2.0%		
2010-2019	6.2%		3.8%		
2019-2022	5.2%		-3.9%		
2010-2022	6.0%		1.4%		
2002-2022	5.1%		1.7%		

Sources: *Airport records for PSP and Bureau of Transportation Statistics for U.S. system.*

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Monthly Enplanement Trends

Figure 2-3 shows PSP's monthly enplanement levels over the past six years from 2017 through 2022, while **Table 2-3** breaks down each year into its monthly enplanement shares (and dates further back to 2014).

Except in 2020 and 2021, PSP's seasonal patterns have been consistent over the years. Passenger activity peaks in March and gradually declines through August before rising again through November. PSP has similar enplanement levels between November and December, as travelers are drawn to PSP's moderate winters.

The COVID-19 pandemic temporarily disrupted PSP's usual seasonality with a dramatic drop from February 2020 to April 2020, with air traffic levels remaining much lower than typical patterns through the rest of the year. Enplanement recovery began to pick up in early 2021 when COVID-19 vaccines saw widespread distribution. By May 2021, PSP's enplanements had reached a level on par with the same month of pre-pandemic years. By June 2021 and onward, air traffic returned to usual patterns and held the pattern at a level above that of pre-pandemic years. The building surge of infections due to the omicron variant caused California to issue a travel advisory and statewide indoor mask mandate (regardless of vaccination status) from December 2021 through February 2022.[3] Alongside the Omicron-related fifth wave leading to the pandemic's peak number of infections by over three-fold, these factors caused monthly enplanements in early 2022 to dip below 2019 levels, but by March had returned to maintaining its pattern above pre-pandemic levels.

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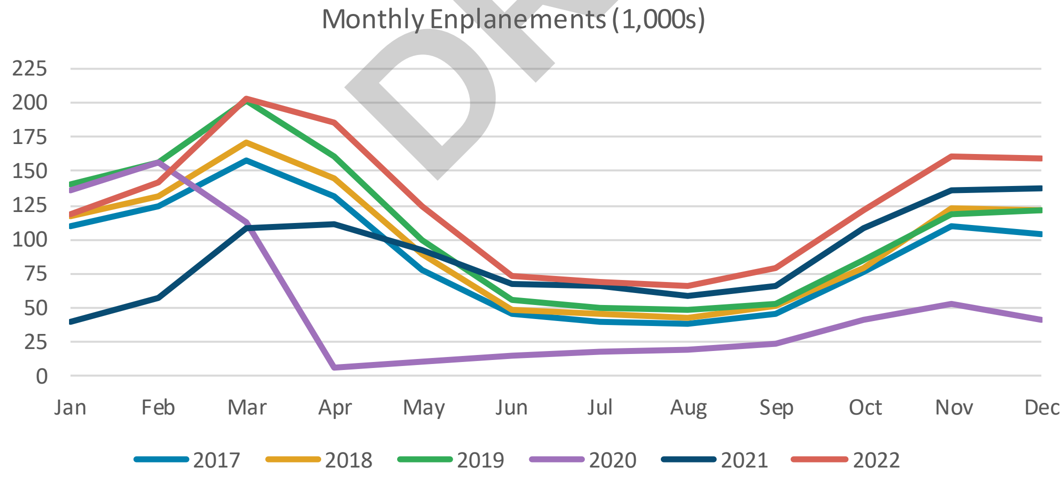
Figure 2-3: PSP Monthly Enplanement Trends



Source: *Airport records.*

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[3] Richard Procter, "Remember when? Timeline marks key events in California's year-long pandemic grind," *CalMatters*, March 2021, https://calmatters.org/health/coronavirus/2021/03/timeline-california-pandemic-year-key-points/.

Table 2-3: PSP Monthly Distribution of Enplanements

Month	2014	2015	2016	2017	2018	2019	2020	2021	2022
Jan	10.3%	10.9%	10.1%	10.3%	10.1%	10.9%	21.5%	3.8%	7.9%
Feb	11.4%	12.5%	12.5%	11.7%	11.4%	12.2%	24.8%	5.5%	9.5%
Mar	14.8%	15.7%	15.1%	14.9%	14.7%	15.6%	17.9%	10.3%	13.5%
Apr	12.7%	12.8%	12.2%	12.4%	12.4%	12.5%	0.9%	10.6%	12.4%
May	8.3%	7.9%	7.6%	7.3%	7.6%	7.7%	1.7%	8.9%	8.2%
Jun	4.5%	4.0%	4.1%	4.2%	4.2%	4.3%	2.3%	6.4%	4.9%
Jul	3.9%	3.5%	3.7%	3.7%	3.9%	3.9%	2.7%	6.3%	4.5%
Aug	3.8%	3.7%	3.8%	3.6%	3.6%	3.7%	2.9%	5.6%	4.4%
Sep	4.5%	4.1%	4.3%	4.3%	4.3%	4.1%	3.7%	6.3%	5.3%
Oct	6.8%	6.7%	7.1%	7.2%	6.8%	6.6%	6.6%	10.4%	8.0%
Nov	9.5%	9.3%	10.1%	10.4%	10.5%	9.1%	8.4%	13.0%	10.7%
Dec	9.4%	9.0%	9.3%	9.9%	10.5%	9.4%	6.6%	13.1%	10.7%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

🟩 Third largest share percentage of annual total.
🟩 Second largest share percentage of annual total.
🟩 Largest share percentage of annual total.

🟥 Third smallest share percentage of annual total.
🟥 Second smallest share percentage of annual total.
🟥 Smallest share percentage of annual total.

Source: *Airport records.*

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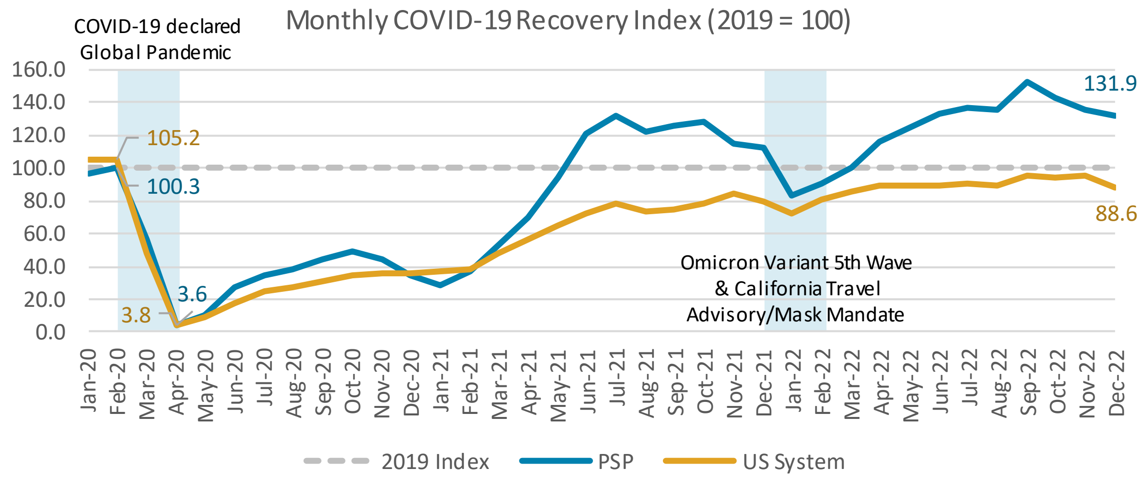
Figure 2-4 compares the monthly enplanement recovery trends over the course of the COVID-19 pandemic, indexed to the corresponding month in 2019. Since the initial drop in air traffic through March and April 2020, PSP's recovery has almost entirely outpaced that of the U.S. system, briefly dipping below national trends in the winter of 2020/2021. The distribution of COVID-19 vaccines accelerated PSP's recovery further than the national recovery, widening the gap in their trends. This gap tightened in January 2022 when the Omicron variant of COVID-19 led to peak infection rates, a California travel advisory, and a reinstated mask mandate, all of which hampered PSP's recovery more than the national recovery. However, the Airport soon continued to outpace the U.S. system in the following months as the fifth wave of infections tapered off. PSP's recovery index had been on a decline in the fourth quarter of 2022, but by December 2022, PSP's enplanements still sat well above the U.S. system at 131.9 percent of its 2019 level (versus the U.S. system's 88.6 percent).

Figure 2-4: Monthly COVID-19 Recovery Trends (2019 = 100)



Source: *Airport records for PSP and Bureau of Transportation Statistics for U.S. system.*

AIRLINE MARKET SHARES

As shown in **Figure 2-5**, in 2022, Alaska held the largest market share at 22.2 percent, followed by American (18.5 percent), followed by Southwest (18.3 percent), followed by United (17.4 percent), and then Delta (8.3 percent) and WestJet (7.3 percent). The remaining 8.1 percent share is made up of PSP's remaining airlines (the "Other" category). **Table 2-4** shows the underlying data for annual airline enplanements.

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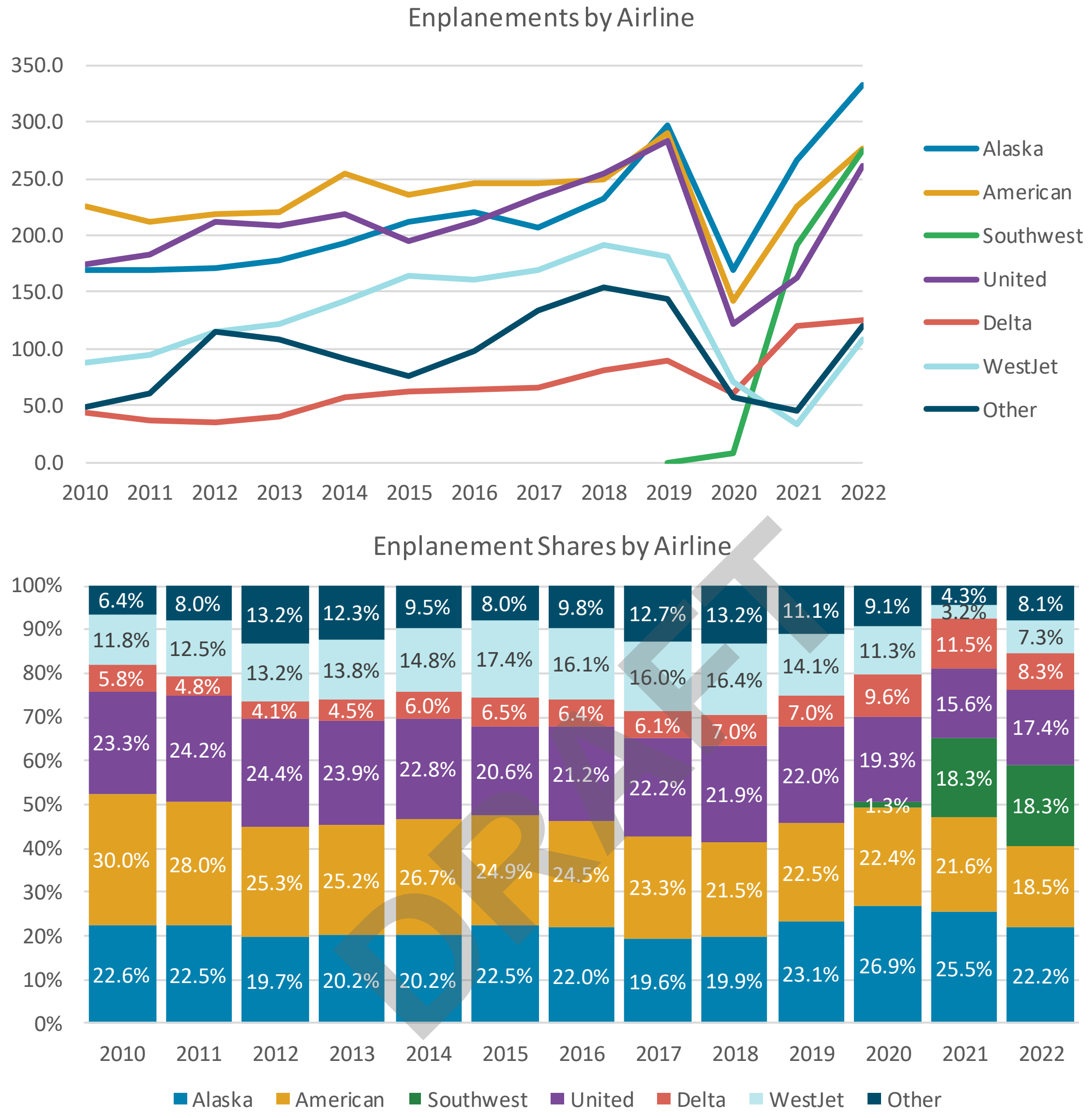
Throughout the 2010s, there had been significant changes in the composition of air carriers at the Airport. Initially, American held the largest share of the PSP market, around 30.0 percent, with roughly 225,000 enplanements. However, as the growth in other airlines began to surpass American's, its market share began to fall and was down to 18.5 percent by the end of 2022. Since 2019, Alaska has overtaken American as the largest airline at PSP.

Southwest began servicing PSP in 2020, capturing just 1.3 percent of market share. Over the next two years, Southwest's activity at the Airport grew rapidly, surpassing WestJet, Delta, and United, establishing itself as the third largest carrier by the end of 2021. Due to international travel restrictions between Canada and the United States, WestJet faced a continued decline in 2021. Other airlines began recovery in the same year, causing its share to fall below Delta and the collective share of airlines in the "Other" category.

Figure 2-5: Enplanement Trends by Airline



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Source: *Airport records.*

Table 2-4: Annual Enplanements and Market Shares by Airline

Enplanements by Airline (Thousands)														CAGR		
Airline	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2010-2019**	**2019-2022**	**2010-2022**
Alaska	169.3	170.3	170.7	177.5	193.7	212.7	220.0	206.7	232.2	298.0	170.3	267.0	333.5	6.5%	3.8%	5.8%
American	225.1	212.5	219.4	221.4	255.2	235.5	245.8	245.8	250.0	290.2	141.9	226.2	277.1	2.9%	-1.5%	1.7%
Southwest										0.0	8.3	191.7	274.9			
United	174.9	183.8	211.4	209.4	218.3	194.7	212.7	234.1	255.4	283.4	122.1	163.0	260.8	5.5%	-2.7%	3.4%
Delta	43.7	36.2	35.6	39.6	57.3	61.6	64.0	64.9	81.7	90.3	60.7	120.3	124.6	8.4%	11.3%	9.1%
WestJet	88.5	94.8	114.4	121.4	141.8	164.4	161.3	169.0	191.4	182.1	71.7	33.8	108.8	8.3%	-15.8%	1.7%
Other	48.1	60.5	114.7	108.1	91.0	75.8	98.3	134.2	153.7	143.5	57.4	45.5	120.9	12.9%	-5.5%	8.0%
Total	**749.7**	**758.0**	**866.1**	**877.5**	**957.2**	**944.6**	**1002.0**	**1054.8**	**1164.3**	**1287.5**	**632.3**	**1047.6**	**1500.6**	**6.2%**	**5.2%**	**6.0%**
AGR		1.1%	14.3%	1.3%	9.1%	-1.3%	6.1%	5.3%	10.4%	10.6%	-50.9%	65.7%	43.2%			

Enplanement Shares by Airline													
Airline	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
Alaska	22.6%	22.5%	19.7%	20.2%	20.2%	22.5%	22.0%	19.6%	19.9%	23.1%	26.9%	25.5%	22.2%
American	30.0%	28.0%	25.3%	25.2%	26.7%	24.9%	24.5%	23.3%	21.5%	22.5%	22.4%	21.6%	18.5%
Southwest											1.3%	18.3%	18.3%
United	23.3%	24.2%	24.4%	23.9%	22.8%	20.6%	21.2%	22.2%	21.9%	22.0%	19.3%	15.6%	17.4%
Delta	5.8%	4.8%	4.1%	4.5%	6.0%	6.5%	6.4%	6.1%	7.0%	7.0%	9.6%	11.5%	8.3%
WestJet	11.8%	12.5%	13.2%	13.8%	14.8%	17.4%	16.1%	16.0%	16.4%	14.1%	11.3%	3.2%	7.3%
Other	6.4%	8.0%	13.2%	12.3%	9.5%	8.0%	9.8%	12.7%	13.2%	11.1%	9.1%	4.3%	8.1%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Source: *Airport records.*

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SCHEDULED PASSENGER SERVICE

Table 2-5 and **Figure 2-6** show the scheduled service trends at PSP from 2018 through the advance schedules of 2023, with three different measures: number of nonstop destinations, average daily departures, and average daily seats.

Across all three measures, PSP's scheduled service has exhibited strong growth over the past six years, helped in part by the addition of Southwest and its quick expansion in the Airport. The total number of unique nonstop destinations served at PSP rose from 20 in 2018 to 34 in 2023, peaking in 2022 with 39 destinations. Despite falling during the pandemic, PSP's average daily departures increased from 40 in 2019 to 43 by 2023. Its average daily seats increased from 4,487 in 2019 to an average of 5,516 in 2023.

In the years leading up to the COVID-19 pandemic, United was the largest presence at PSP in terms of departures, averaging 10 departures per day in 2018 and 11 per day in 2019. During the pandemic, Alaska narrowly surpassed United's daily average departures. As of 2023's advance schedules, both United and Alaska show an even average of 10 scheduled departures per day, ahead of American and Southwest with an average of 7 and 6 per day, respectively. Delta and WestJet trail slightly behind with an average of 4 and 3 daily departures respectively, and the remaining airlines are scheduled to operate a daily average of 2 departures collectively.

Broken down by airlines, Alaska had the highest capacity in terms of daily average seats before the pandemic, followed by United. Since the pandemic, Southwest has surpassed United in 2022, though by a small margin in 2022. Based on advance schedules for 2023, Alaska is set to return to the market leader in terms of seat capacity in 2023, with an average of 1,097 scheduled seats per day (which now exceeds its pre-pandemic numbers), followed by Southwest and United with a daily average of 1,023 and 1,022 seats, respectively. American trails behind with an average of 999 daily scheduled seats, though it has exceeded its 2019 pre-pandemic level. WestJet and Delta are expected to have a daily average of 521 and 482 scheduled seats in 2023, respectively, and the remaining airlines are expected to have a daily average of 371 scheduled seats.

By nature of being composed of multiple distinct air carriers, the "Other" category has consistently served the highest number of unique destinations. The number of destinations served by this group of air carriers spiked during the pandemic, reaching a peak of 18 unique destinations in 2021. Advance schedules show a slight retreat from this large number of destinations, down to 12 unique destinations in 2023, though it still far exceeds the number of destinations served by PSP's six other airlines.

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Table 2-5: Scheduled Passenger Service at PSP

Airline	2018	2019	2020	2021	2022	2023
Alaska						
Number of Nonstop Destinations	4	5	6	8	7	6
Average Daily Departures	5	9	8	9	11	10
Average Daily Seats	814	1,081	910	1,115	1,171	1,097
American						
Number of Nonstop Destinations	3	4	4	4	5	5
Average Daily Departures	8	9	6	7	7	7
Average Daily Seats	862	944	652	833	915	999
Southwest						
Number of Nonstop Destinations	0	0	3	8	10	8
Average Daily Departures	0	0	1	6	8	6
Average Daily Seats	0	0	102	910	1,191	1,023
United						
Number of Nonstop Destinations	6	6	7	5	5	6
Average Daily Departures	10	11	7	8	9	10
Average Daily Seats	909	1,033	597	623	870	1,022
Delta						
Number of Nonstop Destinations	4	4	5	5	4	4
Average Daily Departures	4	4	3	6	4	4
Average Daily Seats	262	288	301	541	403	482
WestJet						
Number of Nonstop Destinations	5	5	4	4	4	4
Average Daily Departures	4	4	2	1	2	3
Average Daily Seats	629	605	259	167	395	521
Other						
Number of Nonstop Destinations	11	13	17	18	16	12
Average Daily Departures	4	3	3	2	3	2
Average Daily Seats	579	536	301	266	523	371
All Airlines						
Number of Nonstop Destinations	20	23	33	38	39	34
Average Daily Departures	35	40	29	39	45	43
Average Daily Seats	4,054	4,487	3,122	4,455	5,468	5,516

Source: *OAG Schedules Analyzer, last accessed March 4, 2023.*

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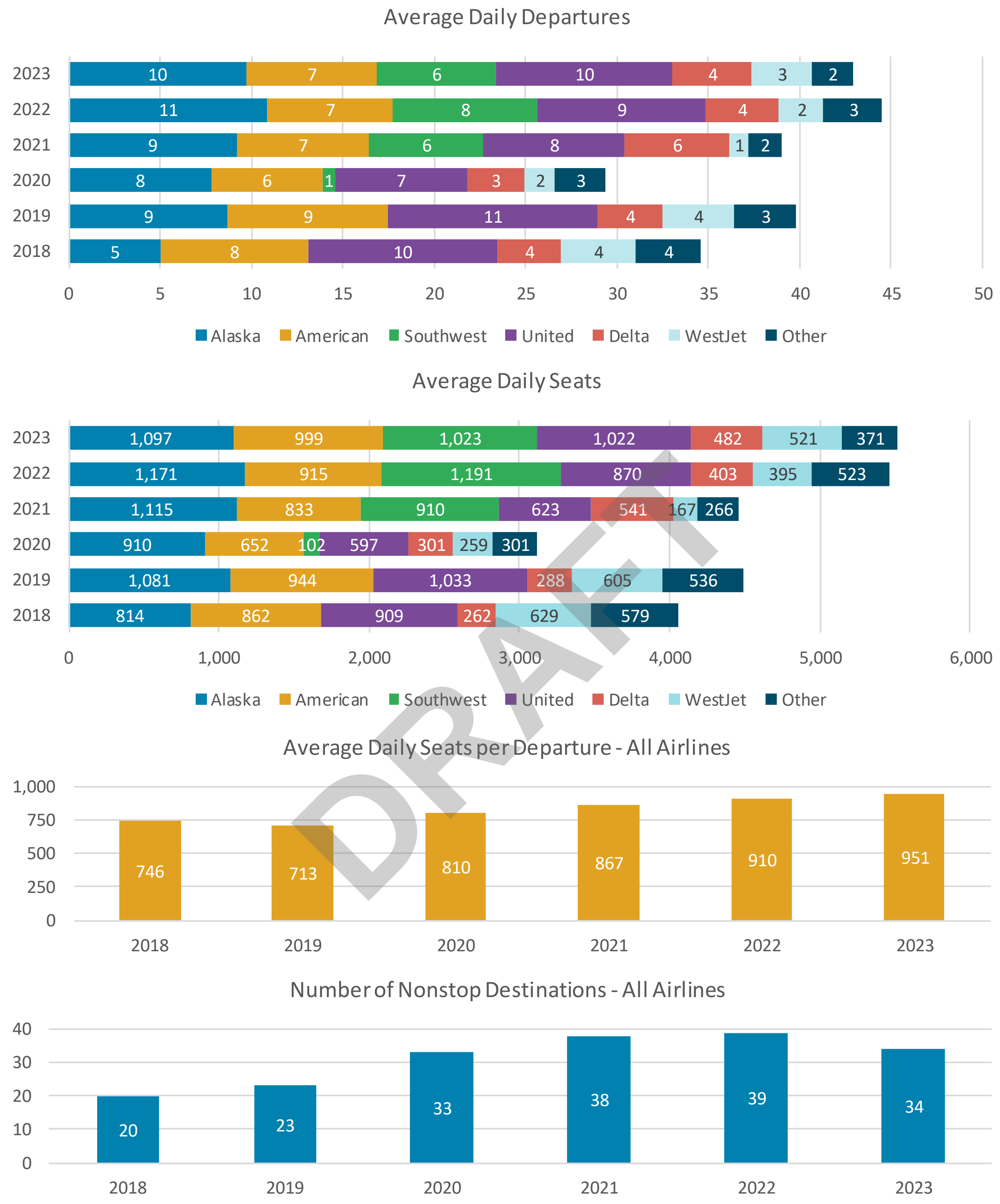
Figure 2-6: Scheduled Passenger Service Trends



Source: *OAG Schedules Analyzer, last accessed March 4, 2023.*

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TOP DOMESTIC O&D MARKETS

Table 2-6 and **Figure 2-7** show PSP’s top 25 O&D markets through the available months of 2022 (currently January through September 2022, as of the time of writing), ranked by share of the Airport’s total 2022 O&D enplanements.

Altogether, the top 25 markets make up 70.9 percent of O&D enplanements at PSP. Seattle-Tacoma International Airport (SEA) holds the largest share of 12.9 percent in 2022. San Francisco International Airport (SFO) holds the second largest share of 8.8 percent—the rest of the top five consists of Portland International Airport (PDX) with a 5.5 percent share, Denver International Airport (DEN) with a 4.4 percent share, and Minneapolis−Saint Paul International Airport (MSP) with a 4.3 percent share.

The top three states found in PSP’s top 25 O&D markets include—in descending order of their O&D enplanement share—California, Washington, and Oregon. While SEA in Washington holds the largest share of PSP’s O&D market as an individual airport, California holds the largest collective market share at the state level. Four of PSP’s top 25 O&D destinations are California airports, accounting for a share size of 17.3 percent. Washington is the second largest state market, with three of its airports in PSP’s top 25 O&D destinations, and a share size of 15.1 percent. Oregon is third—despite having only one airport in PSP’s top 25 O&D markets, PDX accounted for a 5.5 percent share in 2022, which alone exceeds that of Texas with 3 airports and a 4.9 percent share.

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Table 2-6: PSP Top 25 O&D Markets, January-September YTD 2022

Rank	Airport	City	State	PAX	Daily Avg	Share
1	SEA	Seattle	WA	234,510	642.5	12.9%
2	SFO	San Francisco	CA	159,600	437.3	8.8%
3	PDX	Portland	OR	99,830	273.5	5.5%
4	DEN	Denver	CO	79,470	217.7	4.4%
5	MSP	Fort Snelling	MN	79,000	216.4	4.3%
6	ORD	Chicago	IL	73,120	200.3	4.0%
7	OAK	Oakland	CA	67,600	185.2	3.7%
8	SMF	Sacramento	CA	64,540	176.8	3.5%
9	DFW	Dallas	TX	44,620	122.2	2.5%
10	JFK	New York	NY	42,280	115.8	2.3%
11	PHX	Phoenix	AZ	35,750	97.9	2.0%
12	LAS	Las Vegas	NV	30,570	83.8	1.7%
13	SLC	Salt Lake City	UT	29,210	80.0	1.6%
14	AUS	Austin	TX	26,650	73.0	1.5%
15	BOS	Boston	MA	25,700	70.4	1.4%
16	SJC	San Jose	CA	23,790	65.2	1.3%
17	BLI	Bellingham	WA	21,330	58.4	1.2%
18	ATL	Atlanta	GA	21,310	58.4	1.2%
19	LGA	New York	NY	19,990	54.8	1.1%
20	PAE	Everett	WA	19,690	53.9	1.1%
21	BOI	Boise	ID	18,960	51.9	1.0%
22	BNA	Nashville	TN	18,920	51.8	1.0%
23	IAH	Houston	TX	18,130	49.7	1.0%
24	PHL	Philadelphia	PA	17,940	49.2	1.0%
25	EWR	Newark	NJ	17,810	48.8	1.0%
Top 25 Subtotal				**1,290,320**	**3,535.1**	**70.9%**
Other				**528,950**	**6,427.8**	**29.1%**
Total				**1,819,270**	**12,418.2**	**100.0%**

Source: *DB1B, last accessed March 23, 2023.*

Note: *PAX amounts are estimates based on the DB1B sample, rounded to nearest 10.*

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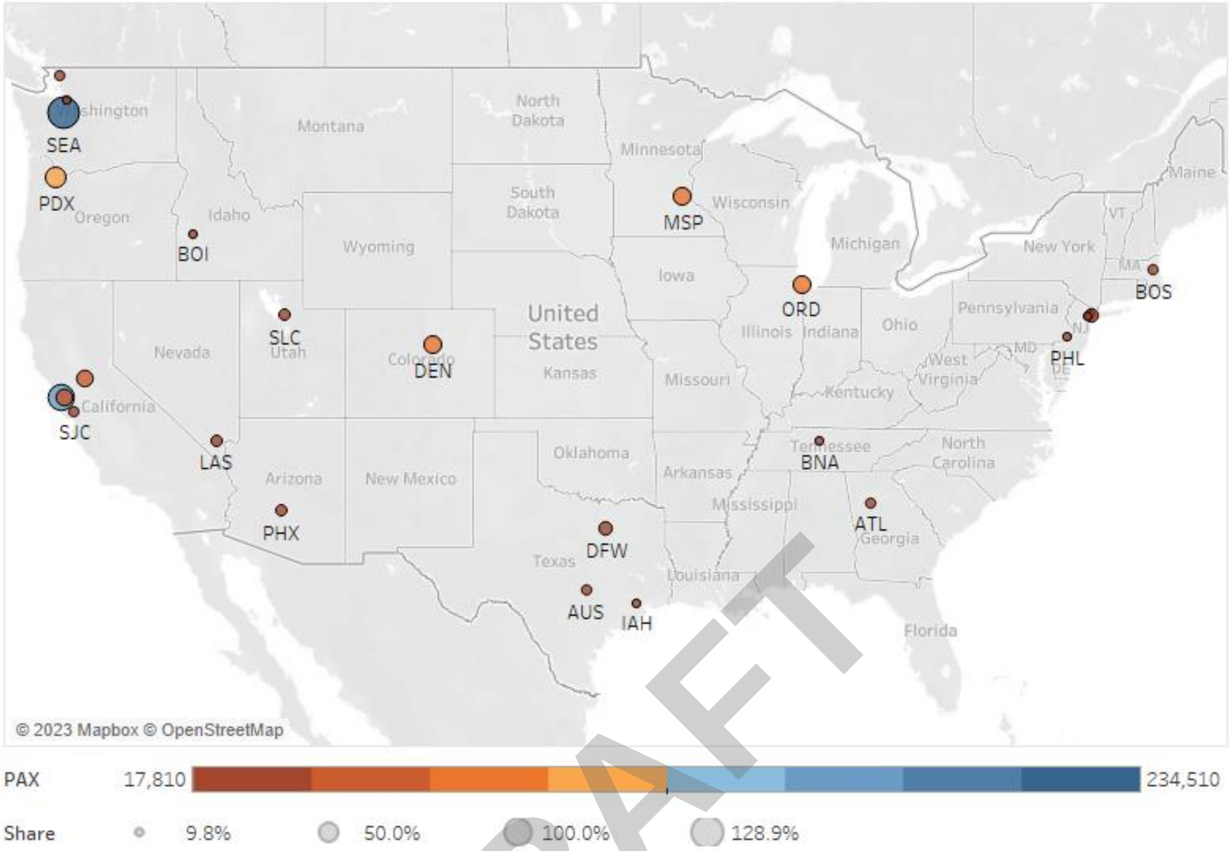
Figure 2-7: PSP Top 25 O&D Market Map, January-September YTD 2022



Source: *DB1B, last accessed March 23, 2023.*

Note: *PAX amounts are estimates based on the DB1B sample, rounded to nearest 10.*

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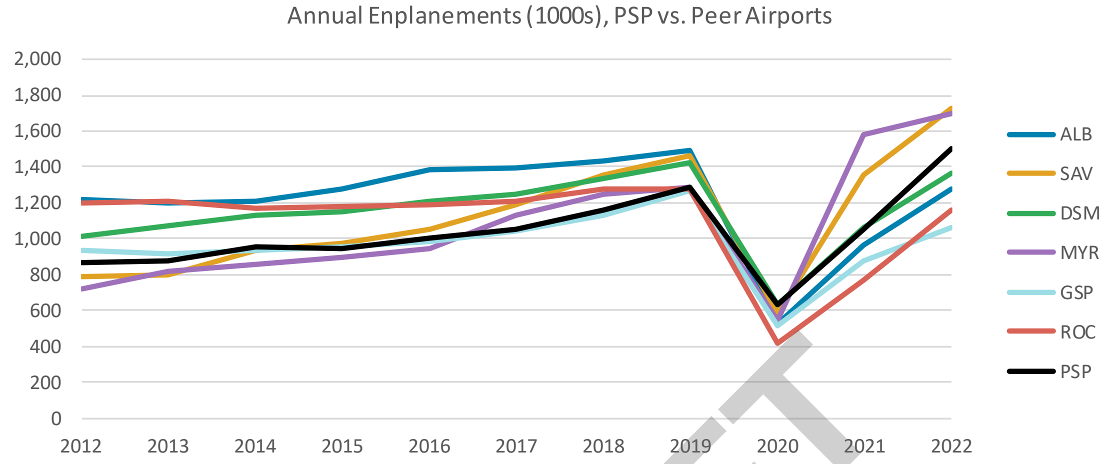
COMPARISON WITH OTHER AIRPORTS

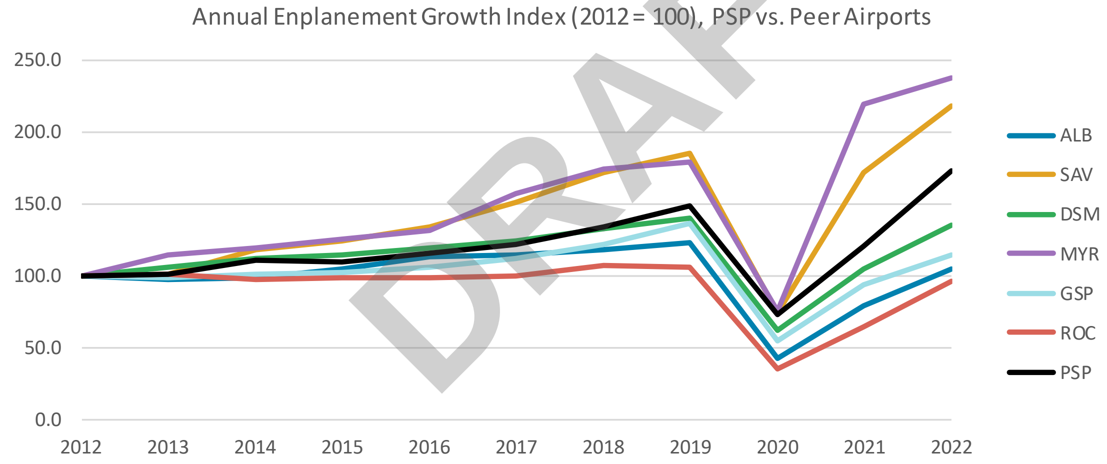
This subsection compares PSP's air traffic and market fare history with two sets of six airports. The first six are airports with the closest enplanement count to PSP, based on 2019 pre-pandemic rankings. These airports include Albany International (ALB), Savannah/Hilton Head International (SAV), and Des Moines International (DSM) as the three closest airports directly above PSP's 2019 enplanement count, as well as Myrtle Beach International (MYR), Greenville Spartanburg International (GSP), and Greater Rochester International (ROC) as the three closest airports directly below PSP's 2019 enplanement count. The second set are six airports also based in Southern California: Los Angeles International (LAX), San Diego International (SAN), John Wayne (SNA), Long Beach (LGB), Ontario International (ONT), and Hollywood Burbank—also known as Bob Hope (BUR).

Comparison of Enplanement Trends with Peer Airports

Relative to its peers, the growth in PSP's enplanements has quickened since the pandemic. Prior to the pandemic, both PSP's enplanement level and growth largely had ranked in the lower half among peer airports However, due to it being less impacted by the pandemic and its faster rebound, PSP's enplanement levels and growth in 2021 and 2022 have surpassed most of its peer airports (except for MYR and SAV). It now ranks third both in terms of enplanement levels and growth. **Figure 2-8** details the regional enplanement growth trends of PSP and its peer airports.

Figure 2-8: Growth Trends for PSP vs. Airports of Closest 2019 Enplanements


Annual Enplanements (1000s), PSP vs. Peer Airports


Annual Enplanement Growth Index (2012 = 100), PSP vs. Peer Airports

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Sources: *Airport records for PSP and Bureau of Transportation Statistics for other airports.*

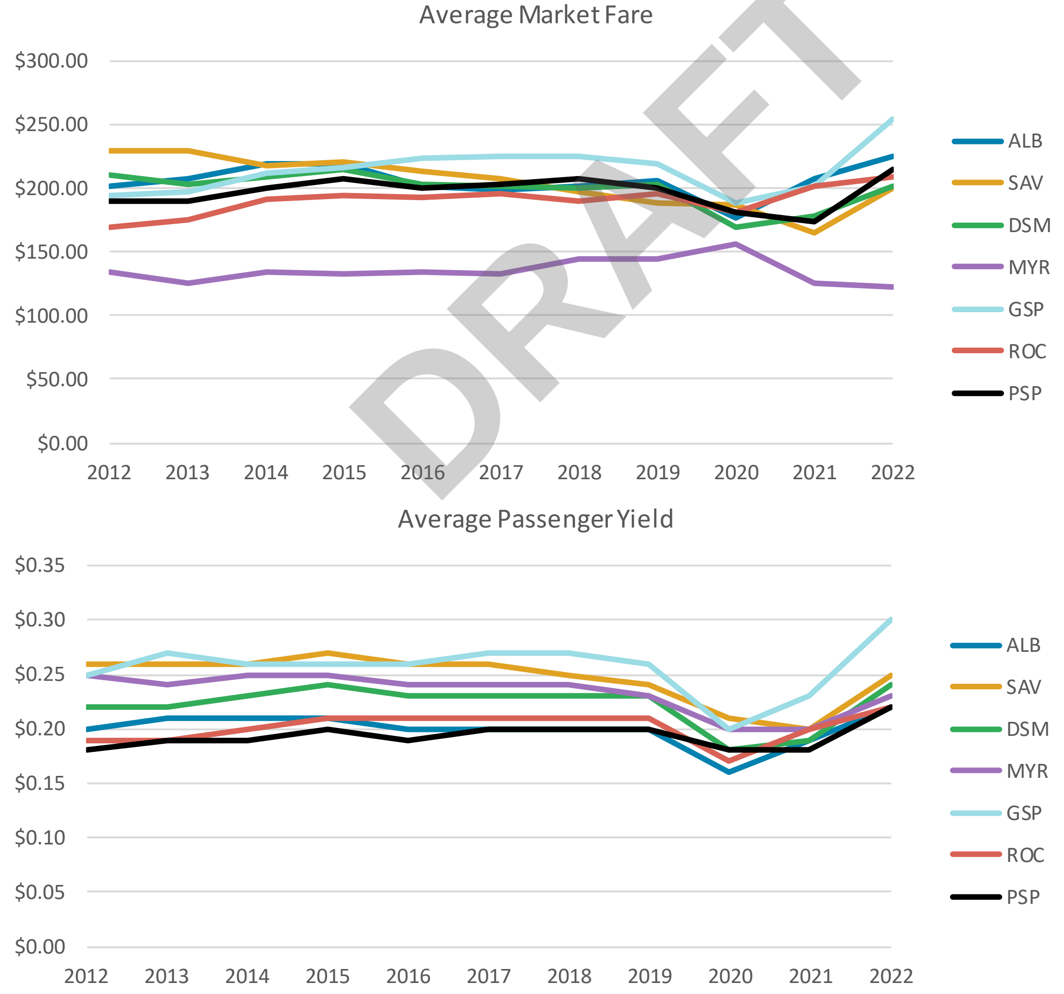
Comparison of Airline Fare and Passenger Yield Trends with Peer Airports

Lower airfares attract passengers. **Figure 2-9** compares the average market fares and average passenger yields at PSP and its peer airports from 2012 to 2022. Passenger yield—defined as the average airline revenue per revenue passenger mile—is similar to average market fare but controls for trip length.

Prior COVID-19, PSP's average market fare stayed between 190 and 210 dollars. This kept the Airport's fare in the lower half of its peers until 2017, when the steady decreases in ALB and DSM's fares eventually put them below PSP. SAV's steadily decreasing market fare also fell below PSP in 2018, though PSP's own slight reduction in market fare placed it into the median among its peers in 2019. PSP's average market fare saw continued decreases through 2020 and 2021 during the COVID-19 pandemic. In 2022, the downward trend reversed—due to inflation, staffing and equipment shortages, and elevated air travel demand—PSP saw a sharp increase from 174 to 214 dollars, which nudged PSP's average market fare to the third highest among sampled peer airports.

Compared to its peer airports, PSP's average passenger yield ranks as one of the lowest. In fact, prior to the pandemic, all of the airports' passenger yields had remained relatively flat. During this period, PSP's annual average passenger yields ranged between 0.18 and 0.20 dollars, which was among the lowest of the seven sampled airports. PSP's yield had a relatively flatter decrease than the other airports at the beginning of the COVID-19 pandemic, from 0.20 dollars in 2019 to 0.18 in 2020. As of September 2022, its average passenger yield rose slightly to 0.22 dollars, though it remains one of the lowest among peer airports.

Figure 2-9: Average Market Fare and Yield, PSP vs. Airports of Closest 2019 Enplanements



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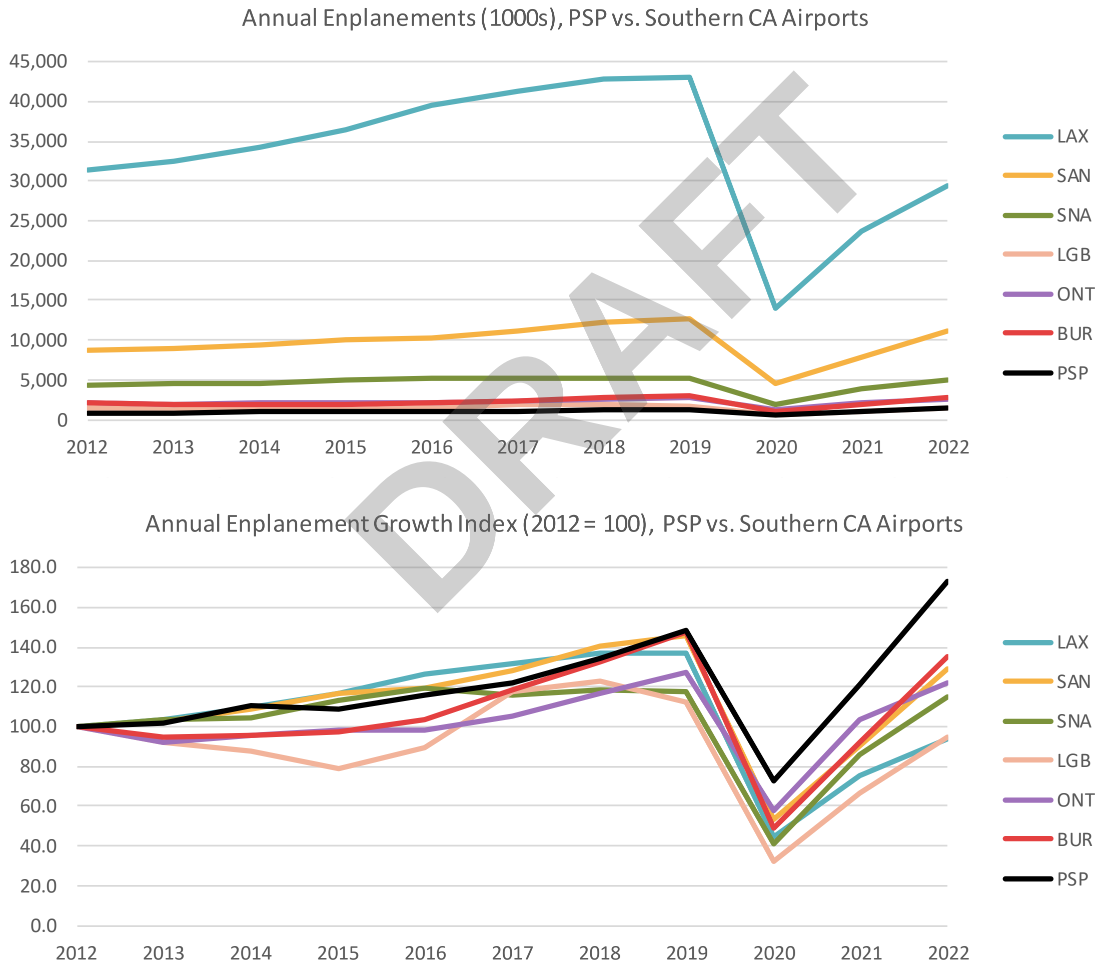
Source: *DB1B.*

Comparison of Enplanement Trends with Southern California Airports

PSP's enplanement history was on the lower end of the sample for Southern California airports, consistently holding the least number of enplanements throughout the 2010s (**Figure 2-10**). Most Southern California airports have not been too far above PSP, though SNA shows the first gap, likely due to being a medium hub airport. From there, SAN maintains the next gap over SNA in enplanements, due to being a large hub airport. Naturally, LAX leads the other airports, as it is one of the most active airports in the United States. However, upon the downturn in 2020 from the COVID-19 pandemic, PSP experienced a less severe decline compared to other Southern California airports, putting its enplanements just above LGB. PSP maintained this slight lead over LGB through the next two years of pandemic recovery.

Figure 2-10:Growth Trends for PSP vs. Southern California Airports



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Sources: *Airport records for PSP and Bureau of Transportation Statistics for other airports.*

Comparison of Airline Fare and Passenger Yield Trends with Southern California Airports

Figure 2-11 compares PSP's average market fare and yield with that of the other six sample Southern California airports. PSP maintained the highest average market fare throughout the past decade, hovering between $190 and $210 until dipping down to $181.17 and $173.67 in 2020 and 2021, respectively. Since then, however, PSP's market fare increased significantly, up to $214.36 in 2022. LAX, SAN, SNA, and ONT all sit near each other in average market fare, substantially below PSP. Below those airports with another notable gap are BUR and LGB, which sit at the bottom two for average market fare, having only neared or barely passed $100 in recent post-pandemic years.

All seven airports are closer together in average yield than average market fare, ranging from $0.15 to $0.20, though PSP has often held or tied for the highest average yield throughout the available history. PSP's average yield declined to $0.18 in 2020 and 2021, though that was still the highest at the time compared to the other Southern California airports. In 2022, PSP surpassed its previous highest average yield, now with an average of $0.22, equal to BUR after that airport experienced its own sharp increase the same year. LGB currently sits at the bottom of the sample, with an average yield of $0.16, due to having not as strong a recovery as other Southern California airports during the pandemic.

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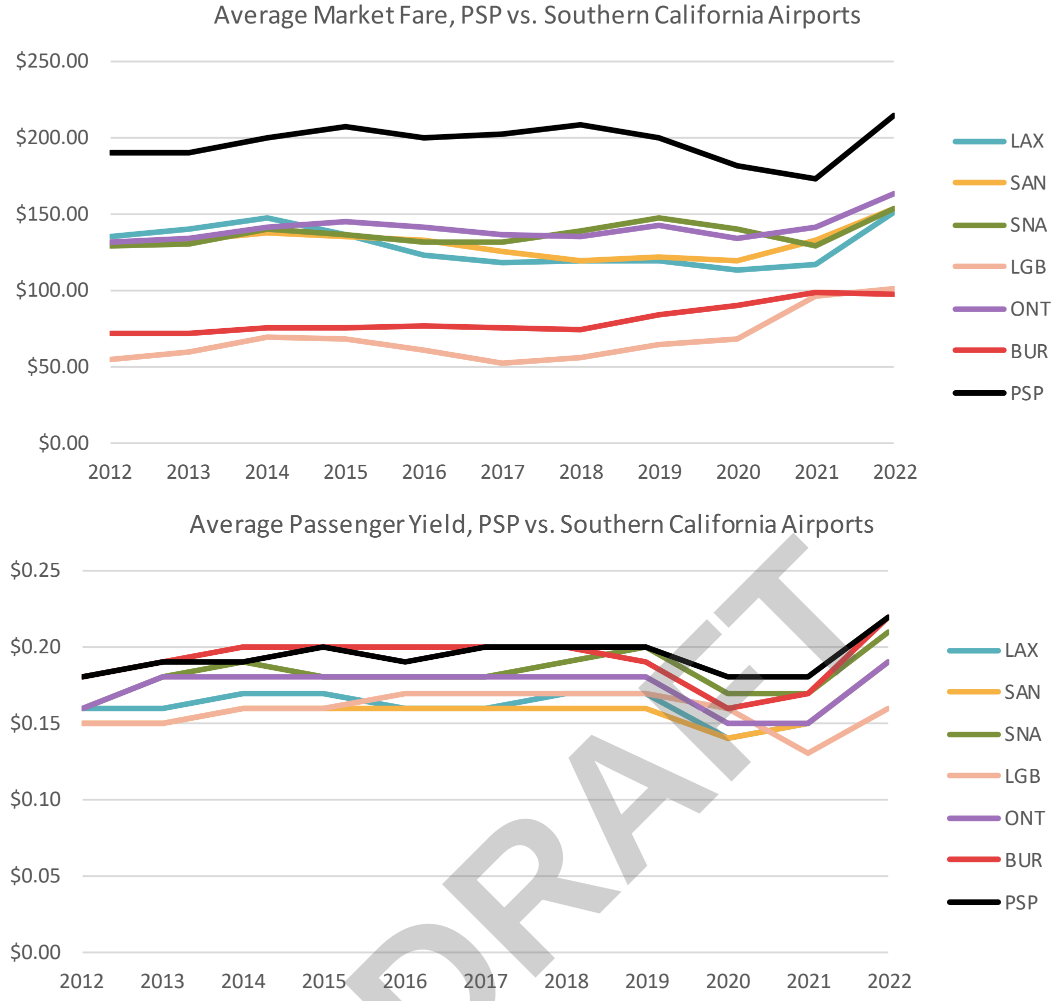
Figure 2-11: Average Market Fare and Yield, PSP vs. Southern California Airports


Average Market Fare, PSP vs. Southern California Airports

Average Passenger Yield, PSP vs. Southern California Airports

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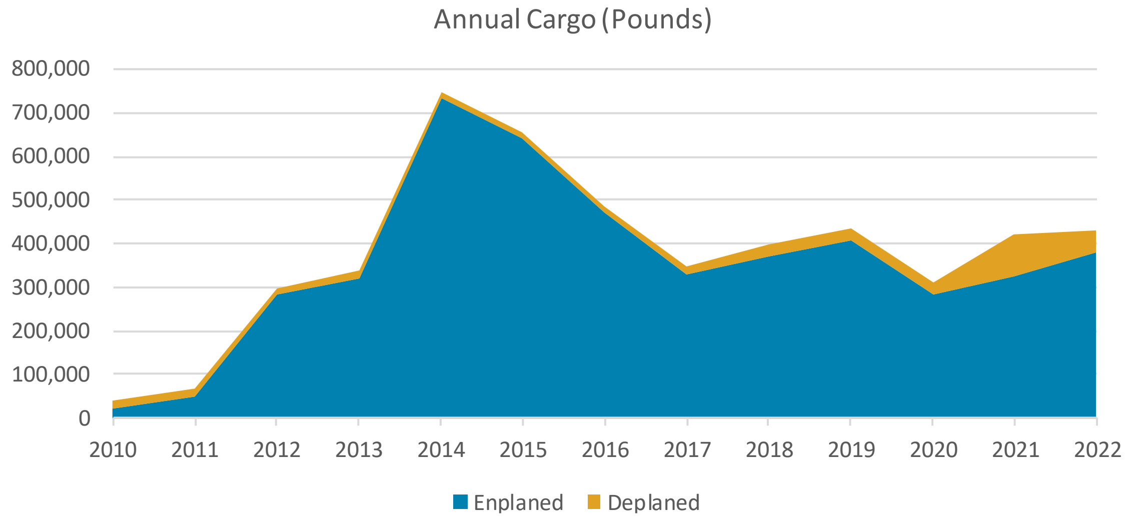
Source: *DB1B.*

AIR CARGO

Figure 2-12 charts PSP's annual air cargo trends, broken down by enplaned and deplaned cargo, while PSP has seen limited growth in air cargo since 2014. Most cargo at the Airport is enplaned, though deplaned cargo began gaining a larger share since the COVID-19 pandemic. In fact, PSP enplaned almost no cargo until 2012, when enplaned cargo increased from 47,235 in 2011 to 281,043 pounds in 2012. Cargo activity at PSP saw a spike in 2014, rising from 336,969 pounds to a peak of 749,041 pounds. From there, PSP's cargo activity declined over the next few years through 2017, and currently sits at 430,806 enplaned and deplaned pounds as of 2022.

Figure 2-12: Annual Air Cargo Trends



Source: *Airport records.*

Table 2-7 breaks down the Airport's annual cargo by each airline's enplaned and deplaned total weight. PSP is not served by any all-cargo carriers, and thus all recorded cargo at the Airport is belly cargo on scheduled passenger carriers, almost all of which carried by Alaska Airlines. After US Airways ceased its cargo service at the Airport after 2011, Alaska has since accounted for over 99 percent of PSP's air cargo through the rest of the decade. While that share has very slightly shrunk with American, United, and Delta contributing in recent years, Alaska still dominates PSP's air cargo with a 97.7 percent share.

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Table 2-7: Annual Enplaned and Deplaned Air Cargo by Airline (in Thousand Pounds)

Year	Alaska	American	United	Delta	Horizon	US Airways	Total
2010	32.4				1.6	7.3	41.2
2011	57.1		0.1		1.2	9.2	67.6
2012	294.0		0.2		0.7		294.9
2013	335.9				1.1		337.0
2014	746.4		1.7		0.9		749.0
2015	655.4						655.4
2016	487.2						487.2
2017	344.6	1.5					346.1
2018	391.6	3.8		0.5			396.0
2019	432.8			1.2			434.0
2020	309.7			0.6			310.4
2021	411.9	6.1		0.9			418.9
2022	421.1	6.9	2.5	0.2			430.8
Compound Annual Growth Rate							
2010-2019	33.4%						29.9%
2019-2022	-0.9%			-41.4%			-0.2%
2010-2022	23.8%						21.6%

Source: *Airport records.*

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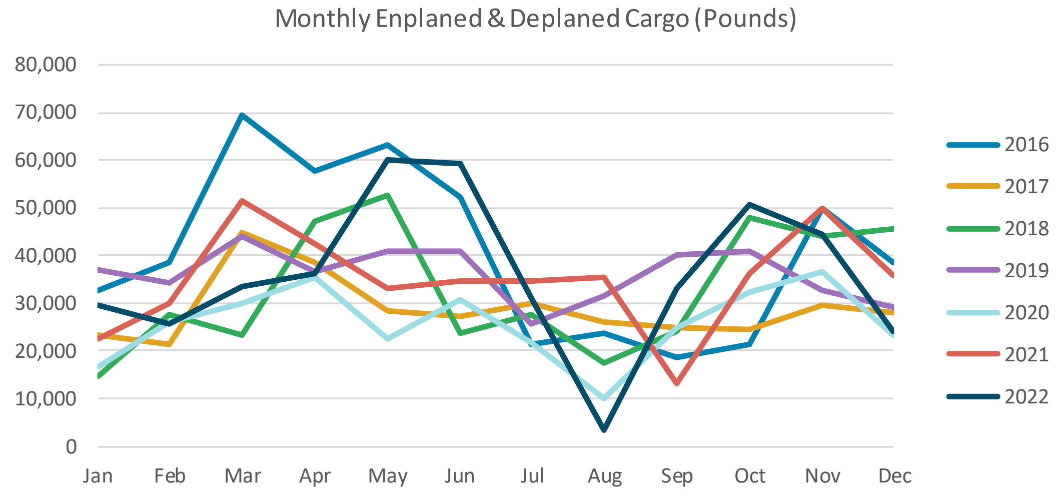
Figure 2-13 shows monthly cargo patterns at PSP from January 2016 through December 2022. PSP's cargo seasonality is very erratic, with the years only loosely following a general pattern of experiencing its highest months in the spring and lowest months in the late summer or early fall.

Figure 2-13: Monthly Cargo Trends



Source: *Airport records.*

COMMERCIAL AIRCRAFT LANDINGS AND LANDED WEIGHT

Figure 2-14 shows the annual historical landings and landed weight trends at PSP from 2010 to 2022, broken down by airline. Table 2-8 and Table 2-9 break down the underlying data and airline shares, while Table 2-10 calculates the annual average landed weight per landing by airline.

Over the past decade, the size and capacity of aircraft at PSP have increased, leading to a significant increase in landed weight. In 2010, the average landed weight per landing was 546,491 pounds, which increased to 813,868 pounds in 2022 (a 48.9 percent total increase). Additionally, the number of annual landings increased from 12,534 in 2010 up to 16,005 in 2022 (a 27.7 percent total increase). As a result, annual landed weight increased from 905 million pounds in 2010 up to 1.8 billion pounds in 2022 (a 95.2 percent total increase).

In terms of landings, United was the largest air carrier at PSP, holding 45 percent of the PSP market in 2010. That share has gradually decreased over time, and more recently, with Alaska's expansion in 2020, United has lost its top standing to Alaska. As of 2022, Alaska holds 24.5 percent of landings at the Airport, followed by United with 20.7 percent, Southwest with 17.8 percent, American with 15.3 percent, Delta with 9.2 percent, and WestJet with 5.4 percent. The remaining 7.1 percent share is composed of the remaining airlines outside of the six biggest shares.

In terms of landed weight, United and American competed closely for the largest share of PSP's market before COVID-19 pandemic. Alaska's market share was a close third. Since 2019, Alaska's growth has exceeded that of the United and American, and in 2021, Alaska held the largest share of PSP's market in terms of landing weight. The entry of Southwest in 2020 and its subsequent rapid growth and use of larger, higher capacity aircraft led it to overtake Alaska by the end of 2022 when it comprised 21.2 percent of landed weight at PSP with 375 million pounds, despite having fewer landings than Alaska and American.

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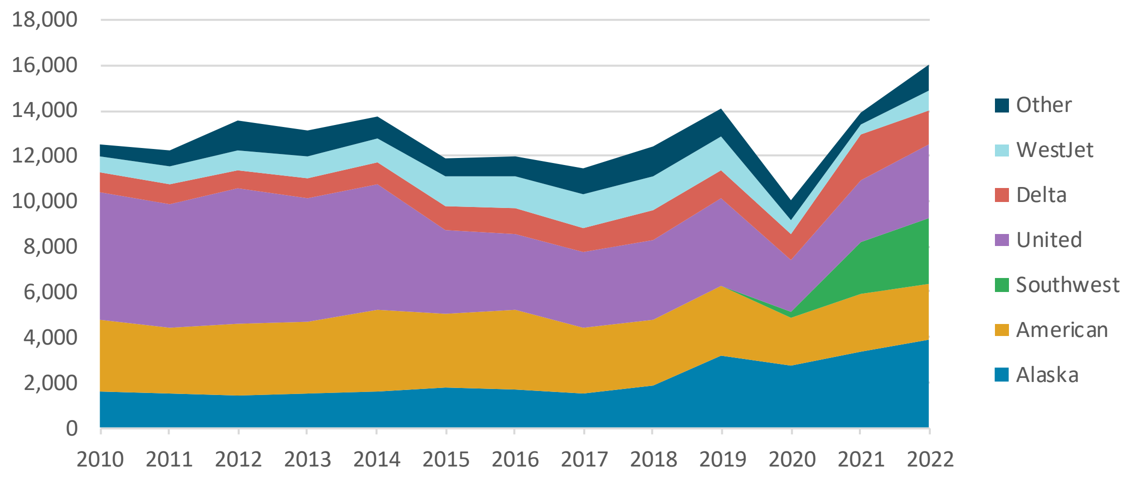
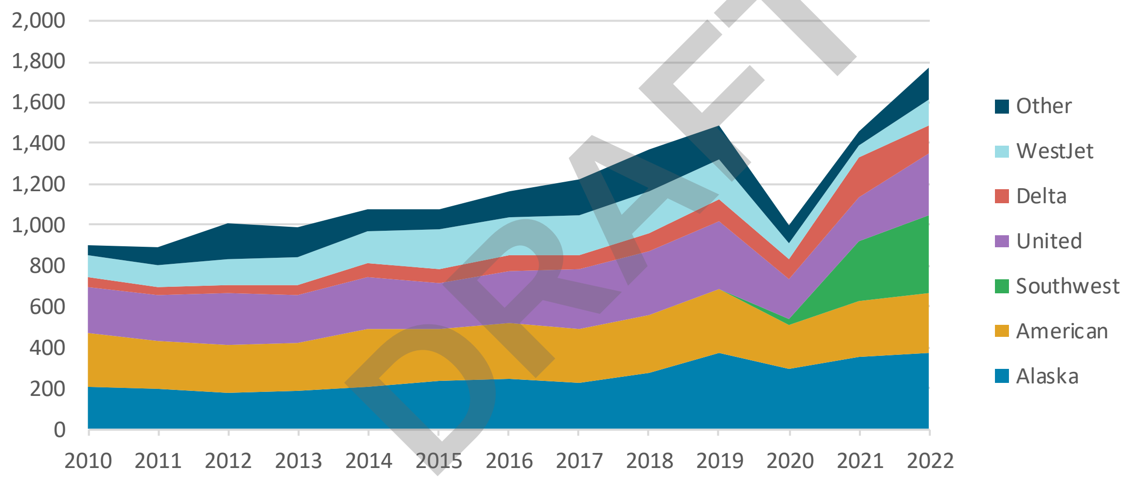
Figure 2-14: Annual Landings and Landed Weight Trends



Landings by Airline

Landed Weight by Airline (1,000,000 lbs)



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Source: *Airport records.*

Table 2-8: Annual Landings by Airline

Airline	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	CAGR		
														2010-2019	2019-2022	2010-2022
Alaska	1,593	1,482	1,434	1,485	1,607	1,747	1,710	1,511	1,811	3,147	2,753	3,317	3,917	7.9%	7.6%	7.8%
American	3,183	2,923	3,148	3,148	3,569	3,315	3,482	2,880	2,930	3,150	2,067	2,576	2,455	-0.1%	-8.0%	-2.1%
Southwest											255	2,275	2,844			
United	5,604	5,496	5,973	5,528	5,545	3,646	3,388	3,327	3,565	3,804	2,338	2,727	3,317	-4.2%	-4.5%	-4.3%
Delta	850	825	789	884	1,003	1,077	1,147	1,121	1,286	1,301	1,135	2,093	1,468	4.8%	4.1%	4.7%
WestJet	751	786	928	965	1,084	1,330	1,351	1,438	1,468	1,420	578	361	863	7.3%	-15.3%	1.2%
Other	553	687	1,249	1,095	907	740	920	1,195	1,326	1,238	889	587	1,141	9.4%	-2.7%	6.2%
Total	**12,534**	**12,199**	**13,521**	**13,105**	**13,715**	**11,855**	**11,998**	**11,472**	**12,386**	**14,060**	**10,015**	**13,936**	**16,005**	**1.3%**	**4.4%**	**2.1%**
AGR		-2.7%	10.8%	-3.1%	4.7%	-13.6%	1.2%	-4.4%	8.0%	13.5%	-28.8%	39.2%	14.8%			

Airline	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Alaska	12.7%	12.1%	10.6%	11.3%	11.7%	14.7%	14.3%	13.2%	14.6%	22.4%	27.5%	23.8%	24.5%
American	25.4%	24.0%	23.3%	24.0%	26.0%	28.0%	29.0%	25.1%	23.7%	22.4%	20.6%	18.5%	15.3%
Southwest											2.5%	16.3%	17.8%
United	44.7%	45.1%	44.2%	42.2%	40.4%	30.8%	28.2%	29.0%	28.8%	27.1%	23.3%	19.6%	20.7%
Delta	6.8%	6.8%	5.8%	6.7%	7.3%	9.1%	9.6%	9.8%	10.4%	9.3%	11.3%	15.0%	9.2%
WestJet	6.0%	6.4%	6.9%	7.4%	7.9%	11.2%	11.3%	12.5%	11.9%	10.1%	5.8%	2.6%	5.4%
Other	4.4%	5.6%	9.2%	8.4%	6.6%	6.2%	7.7%	10.4%	10.7%	8.8%	8.9%	4.2%	7.1%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Source: *Airport records.*

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Table 2-9: Annual Landed Weight by Airline (in Million Pounds)

Airline	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	CAGR		
														2010-2019	2019-2022	2010-2022
Alaska	205	195	172	191	210	235	246	227	275	368	295	355	371	6.7%	0.3%	5.1%
American	269	237	241	226	278	253	277	266	287	315	215	267	298	1.8%	-1.8%	0.8%
Southwest											33	295	375			
United	225	222	254	242	261	231	251	287	306	337	187	222	304	4.6%	-3.4%	2.5%
Delta	49	39	37	42	63	69	73	72	90	102	103	195	142	8.4%	11.8%	9.3%
WestJet	101	110	129	136	155	187	192	198	211	196	80	52	122	7.6%	-14.6%	1.6%
Other	55	89	176	153	115	102	130	177	199	168	87	73	155	13.1%	-2.7%	8.9%
Total	**905**	**891**	**1,009**	**991**	**1,081**	**1,076**	**1,169**	**1,228**	**1,367**	**1,485**	**1,001**	**1,459**	**1,767**	**5.7%**	**6.0%**	**5.7%**
AGR		-1.5%	13.2%	-1.8%	9.1%	-0.5%	8.6%	5.1%	11.3%	8.6%	-32.6%	45.8%	21.1%			

Airline	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Alaska	22.7%	21.8%	17.0%	19.3%	19.4%	21.8%	21.0%	18.5%	20.1%	24.8%	29.5%	24.3%	21.0%
American	29.7%	26.6%	23.9%	22.8%	25.7%	23.5%	23.7%	21.7%	21.0%	21.2%	21.5%	18.3%	16.8%
Southwest											3.3%	20.2%	21.2%
United	24.9%	24.9%	25.2%	24.4%	24.1%	21.4%	21.5%	23.4%	22.4%	22.7%	18.6%	15.2%	17.2%
Delta	5.4%	4.4%	3.7%	4.2%	5.8%	6.4%	6.2%	5.9%	6.6%	6.8%	10.3%	13.4%	8.0%
WestJet	11.2%	12.3%	12.8%	13.7%	14.3%	17.4%	16.5%	16.1%	15.4%	13.2%	8.0%	3.5%	6.9%
Other	6.1%	10.0%	17.4%	15.4%	10.7%	9.4%	11.1%	14.4%	14.5%	11.3%	8.7%	5.0%	8.8%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Source: *Airport records.*

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Table 2-10: Annual Average Weight per Landing by Airline (in Pounds)

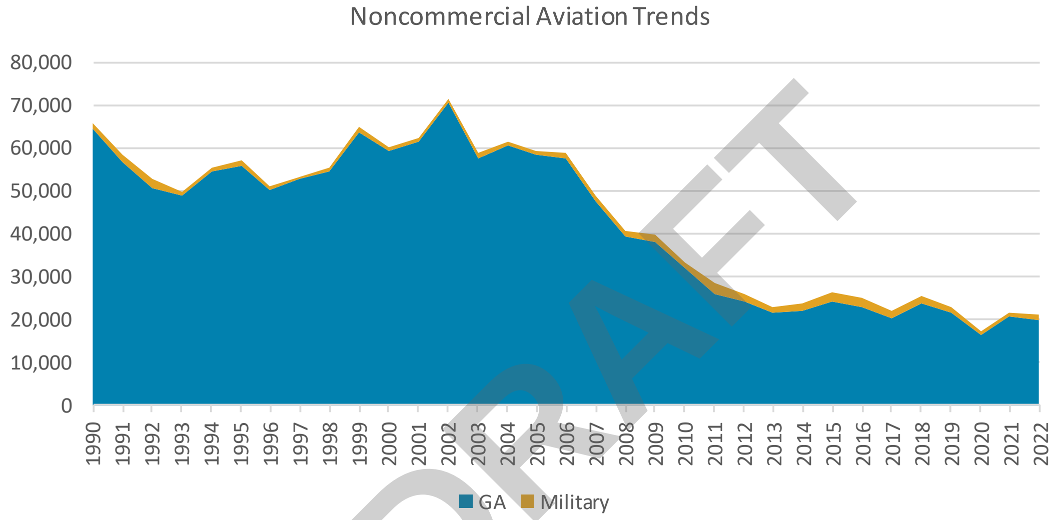
Airline	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	CAGR		
														2010-2019	2019-2022	2010-2022
Alaska	128,801	131,242	119,910	128,833	130,514	134,258	143,767	150,257	151,751	116,863	107,272	106,932	94,637	-1.1%	-6.8%	-2.5%
American	84,560	81,189	76,554	71,946	77,931	76,463	79,569	92,521	97,953	99,914	104,242	103,719	121,286	1.9%	6.7%	3.1%
Southwest											128,063	129,483	131,987			
United	40,159	40,392	42,545	43,838	46,982	63,243	74,090	86,293	85,730	88,575	79,834	81,560	91,699	9.2%	1.2%	7.1%
Delta	57,661	47,090	46,825	47,534	63,021	64,157	63,480	64,232	70,033	78,022	91,150	93,262	96,581	3.4%	7.4%	4.4%
WestJet	135,034	139,338	139,500	141,036	142,536	140,683	142,386	137,889	143,590	138,276	138,631	143,209	141,873	0.3%	0.9%	0.4%
Other	100,275	129,809	140,557	139,769	127,000	137,289	140,951	148,240	149,937	135,748	98,228	124,880	135,805	3.4%	0.0%	2.6%
Total Avg.	**72,225**	**73,068**	**74,626**	**75,644**	**78,840**	**90,797**	**97,414**	**107,046**	**110,376**	**105,644**	**99,950**	**104,697**	**110,413**	**4.3%**	**1.5%**	**3.6%**
AGR		1.2%	2.1%	1.4%	4.2%	15.2%	7.3%	9.9%	3.1%	-4.3%	-5.4%	4.7%	5.5%			

Source: *Airport records.*

HISTORICAL NONCOMMERCIAL AVIATION ACTIVITY

Noncommercial aviation activity consists of general aviation (GA) and military operations. **Figure 2-15** shows the history of noncommercial aviation trends at PSP from 1990 to 2022. Overall, noncommercial operations at PSP swung down through the early 1990s, then back up to a peak of 71,782 in 2002. Since then, noncommercial operations almost consistently trended downward. The overall decrease decelerated by 2013 and hovered in the 20,000s through the rest of the decade. After a sharper dip in 2020, noncommercial operations now sit at 21,101 as of 2022. Almost all of PSP's noncommercial trends are GA operations, which have consistently made up more than a 90 percent share compared to military operations.

Figure 2-15: Noncommercial Aircraft Operations



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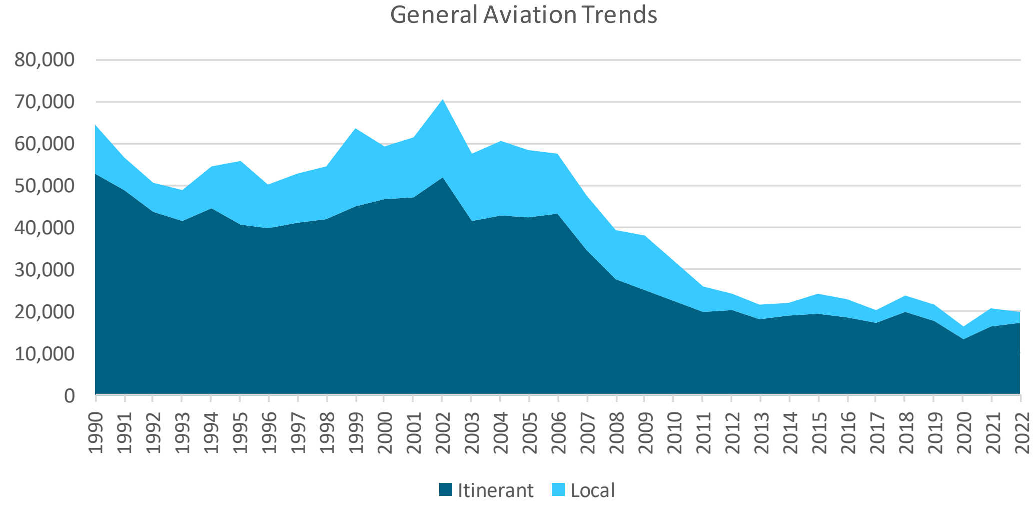
Source: *Federal Aviation Administration Air Traffic Activity System (ATADS).*

Annual General Aviation Trends

PSP's GA activity, comprised of itinerant and local operations, covers non-commercial and non-military passenger or cargo services provided at the Airport. GA activity typically satisfies regional demands for air transport, including private business travel, emergency transport, flight instruction, and recreational flying. It is therefore sensitive to both local and national economic conditions. Itinerant operations are flights going to and coming from a different airport, while local GA operations include flights within the local traffic pattern of the Airport.

Itinerant activity makes up the majority of PSP's GA, at least 70 percent of the Airport's GA operations almost annually. Local operations grew during the Great Recession, reaching a peak of 34.2 percent in 2009 (the only year itinerant operations fell below a 70 percent share). Since then, the local share varied but had largely shrunk through the next decade. As of 2022, local operations make up 13.9 percent of PSP's GA. **Figure 2-16** shows PSP's annual GA operations.

Figure 2-16: Annual GA Operations



Source: *Federal Aviation Administration Air Traffic Activity System (ATADS).*

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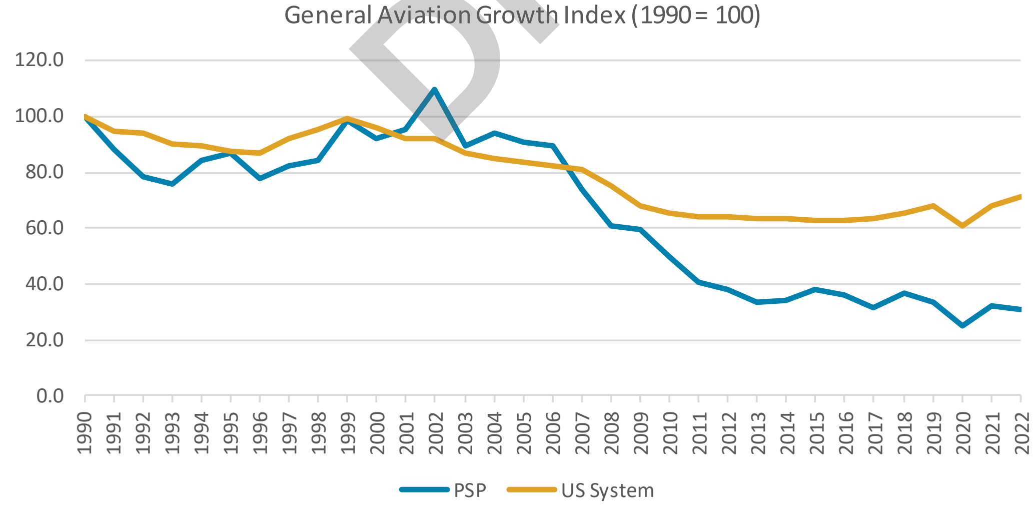
Throughout their available recorded history, except for a brief period between 2001 and 2006, GA operations growth at PSP has mostly lagged behind that of the U.S. system. Since 2006, the gap between PSP's GA operations and the U.S. system has widened. As of 2022, PSP's GA operations are currently at 30.9 percent of what they used to be in 1990, while U.S. system GA operations are at 71.1 percent of their 1990 level. **Figure 2-17** compares the annual growth in GA operations for PSP against the national aviation system.

Figure 2-17: PSP vs. U.S. System Annual GA Operations Growth Index (1990 = 100)

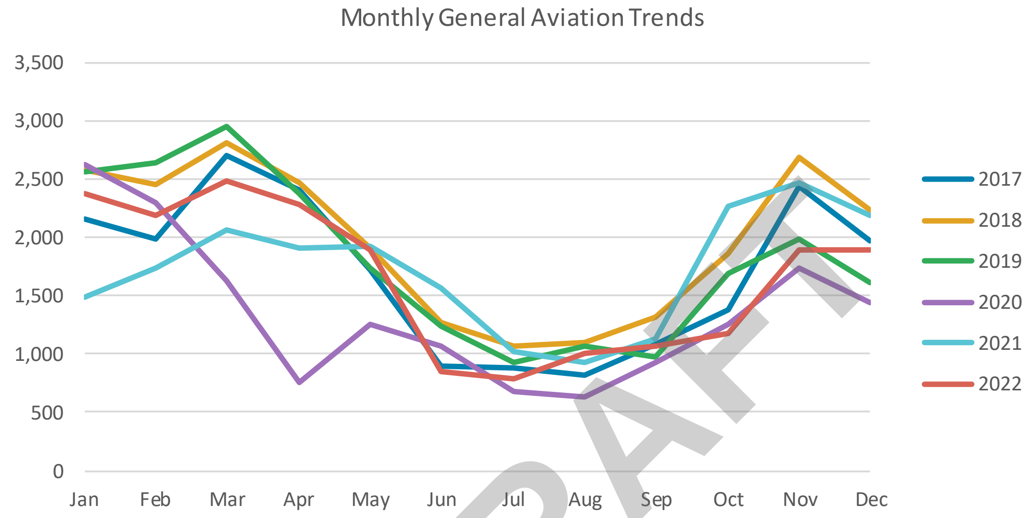


Source: *Federal Aviation Administration Air Traffic Activity System (ATADS).*

Monthly General Aviation Trends

Aside from the initial drop in operations between January and April 2020, the seasonal patterns in PSP's GA trends have mostly remained consistent since 2017. GA activity largely peaks in March, after which operations would swing down to the Airport's least active months in the late summer, followed by another upswing to another peak in November. The March peak is usually higher than the November peak, with the exception of 2021, when operations were still recovering from the pandemic. **Figure 2-18** details PSP's GA operations by month.

Figure 2-18: Monthly GA Operations



Source: *Federal Aviation Administration Air Traffic Activity System (ATADS).*

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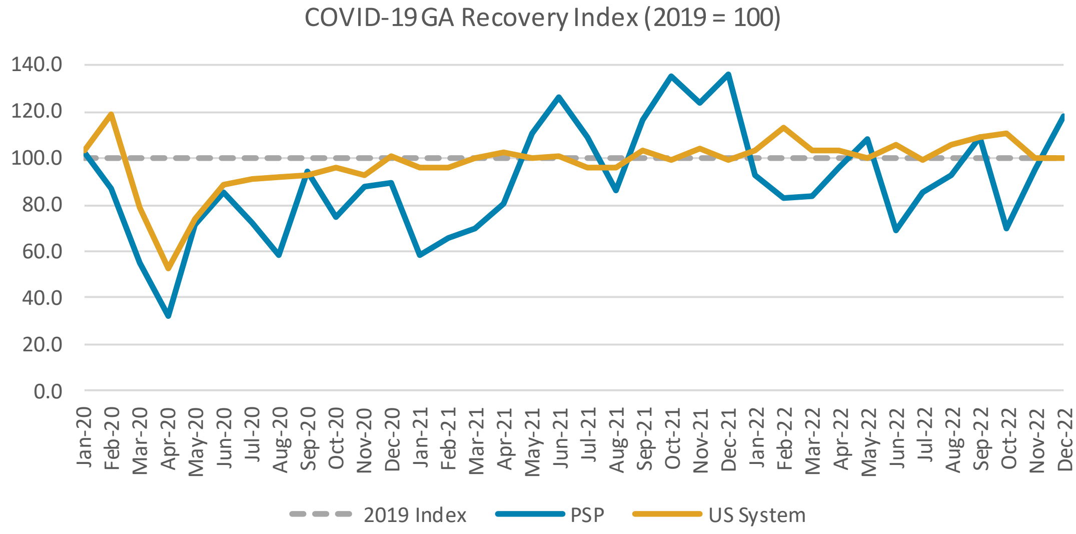
As with the rest of the aviation industry, GA activity dropped at PSP and the U.S. system through the beginning months of the COVID-19 pandemic: PSP's GA operations decreased to 32 percent of its 2019 level, while the U.S. system decreased to 53 percent of its 2019 level. Unlike commercial aviation, however, GA activity did not fall as far down, nor did it stay down for as long. U.S. system GA operations returned to pre-pandemic levels by December 2020. PSP's GA recovery has been much rockier, first passing pre-pandemic levels in May 2021, but falling back below pre-pandemic levels with periodic spikes through 2022. As of December 2022, PSP's GA operations have again surpassed pre-pandemic numbers at 117.9 percent of its 2019 level, while the U.S. system's GA operations sit at 100.2 percent of its 2019 level. **Figure 2-19** compares PSP's monthly COVID-19 GA recovery index to that of the national aviation system.

Figure 2-19: Monthly PSP vs. U.S. System COVID-19 GA Recovery Index (2019 = 100)



Source: *Federal Aviation Administration Air Traffic Activity System (ATADS).*

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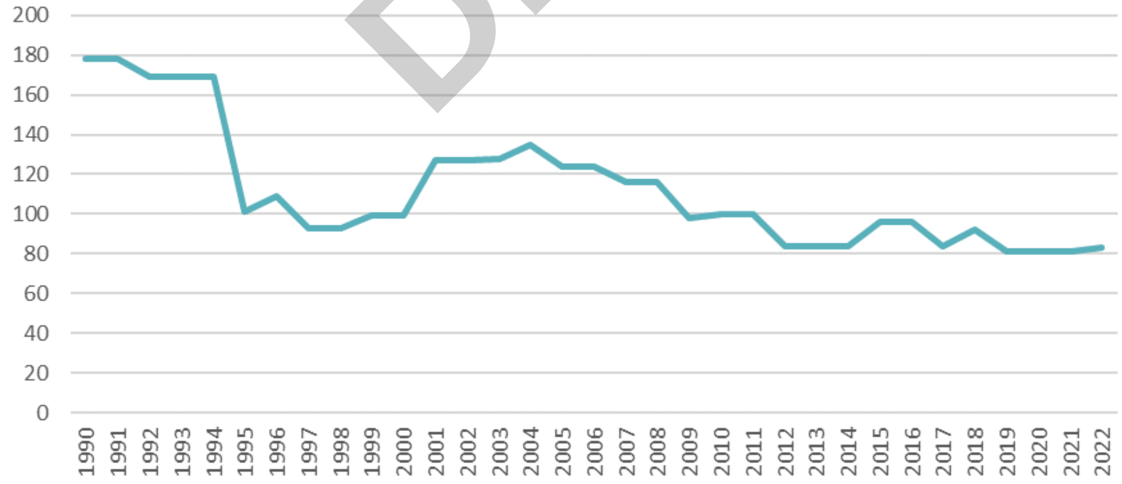
Based Aircraft

Figure 2-20 shows the number of aircraft based at PSP, which has fallen by more than 50 percent since 1990. Based on the historical numbers reported in the latest FAA Terminal Area Forecast (TAF) for PSP, the number of based aircraft decreased from 178 in 1990 and 1991 to 81 in 2019-2021 and is estimated to be 183 in 2022.

Figure 2-20: Based Aircraft



Source: *Federal Aviation Administration Terminal Area Forecasts.*

COMMERCIAL PASSENGER TRAFFIC - FORECASTS

This section presents forecasts of enplanements and passenger aircraft operations, along with a discussion of the forecast methodology and results. Forecast development takes into account the pandemic impacts, the ensuing demand and supply changes in the aviation industry, and the changes in the business environment. To achieve this, it employs a hybrid modeling framework that combines multiple forecasting methods and multiple data sources to project air traffic during different phases of recovery and growth. This approach allows the use of different methods and available data to best reflect supply and demand trends during each phase. The forecast horizon is divided into a near-term phase and a long-term phase.

The different forecasting methods employed are summarized below:

- Use of available advance airline schedules, along with an analysis of trends in seat completion rates and boarding load factors—a bottom-up forecasting approach reflecting current and near-term supply changes.
- Analysis of monthly enplanement recovery trends using trendline fitting (univariate time series regression) to capture current air traffic demand growth patterns.
- Multivariate regression analysis to link long-term growth in demand for air travel to fundamental economic drivers such as (1) national economic growth trends indicated by the U.S. real Gross Domestic Product (GDP) per capita and (2) trends in the price of air travel measured by average passenger yield.
- A top-down forecasting approach to derive projections of aircraft operations from forecast enplanements, where intermediate forecast inputs include fleet mix projections, seats per aircraft operation, and boarding load factors by airline—forecast inputs that reflect supply-side changes.

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Forecast scenario development acknowledges the elevated risk and uncertainty in the aviation industry (see **Appendix B**) and the broad economic environment by producing a range of forecasts. Three forecast scenarios are presented: Low, Base, and High scenarios. Among the three scenarios presented, the Base scenario is recommended as the forecast scenario for FAA approval.

The Low and High complete a range of forecast activity levels for planning and sensitivity analyses to anticipate both downside and upside possibilities. In the short run, the differences in enplanement growth are driven by assumptions on boarding load factors and schedule completion rates. In the long run, the differences are driven by differences in key demand drivers, including GDP growth and passenger yields. The future, however, is inherently uncertain. A multitude of factors and events can introduce uncertainty, especially over a long forecast period. Forecast development relies on information available at the time of development; if the outlook changes materially and any of the assumptions fail to hold, actual traffic could fall outside forecast levels presented by the three scenarios.

Hybrid Forecast Development Framework

A hybrid modeling framework leverages the strengths of different forecasting methods and data sources in projecting air traffic during different phases of recovery and growth, which is shown in **Figure 2-21**. The forecast period is divided into two phases: a near-term phase and a long-term phase.

In the near-term phase, analysis of traffic recovery trends, published airline schedules, seat completion rates, and boarding load factors produce projections of flights, seats, and enplanements. During this phase, the growth of passenger traffic is projected on a monthly frequency. Once the growth patterns of projected monthly enplanements stabilize, the forecast period enters the long-term phase. In the long-term phase, multivariate regression analysis is used to (1) quantify the relationship between air travel demand and key market drivers and (2) project annual enplanement growth rates based on projected trends in key market drivers.

Forecast development by phase allows us to consider different factors expected to drive traffic trends in the different phases. In the near-term phase, for instance, the enplanement forecasts are based on assumptions of monthly seat completion rates and boarding load factors. These assumptions are derived from the analysis of high-frequency TSA throughput data and published advance airline schedules. This forecasting approach, in addition to the use of near real-time data, allows the forecasts to reflect the most up-to-date trends in the Airport's air traffic and airlines' capacity.

In the long-term phase, the growth patterns of the Airport's passenger traffic are assumed to have stabilized. This "normalization" indicates a new equilibrium in the relationship between air travel demand and air travel supply. Market demand factors, such as income and price, along with any lasting changes in personal and business travel propensity and preferences, will again become the primary driver of growth in passenger demand for air travel. Forecasting in this phase is done on a quarterly frequency.

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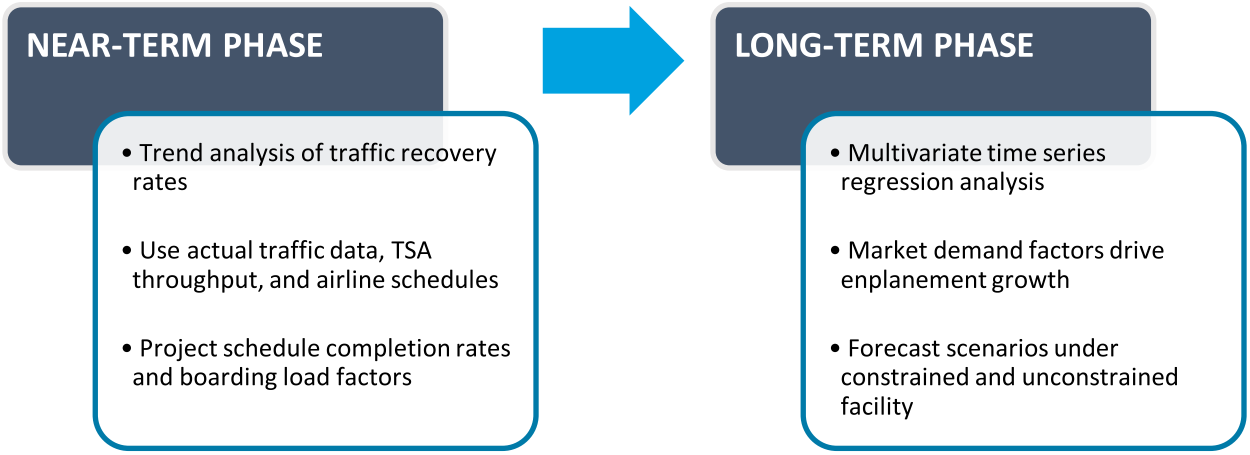
Figure 2-21: Forecast Development by Phase



NEAR-TERM PHASE

- Trend analysis of traffic recovery rates
- Use actual traffic data, TSA throughput, and airline schedules
- Project schedule completion rates and boarding load factors

LONG-TERM PHASE

- Multivariate time series regression analysis
- Market demand factors drive enplanement growth
- Forecast scenarios under constrained and unconstrained facility

Near-Term Phase

In this phase, forecast development considers the recent progress in traffic recovery and growth. To reflect the most recent air traffic trends at the Airport, the analysis is based on near real-time traffic data at the time of forecast development (April 2023). Data on actual airport activity (enplanements, departures, and landed weight) was available through January 2023. The Transportation Security Administration (TSA) screening throughput data was available through April 2023, reflecting PSP's actual passenger traffic patterns in real time. Data on airlines' seat capacity is based on advance airline schedules accessed in April 2023.

Airline schedules, supplemented with TSA throughput screening data, provide the starting point for projecting monthly flights, seats, and enplanements by airline from February to September 2023. Specifically, the enplanements are estimated using advance airline schedules, adjusted for expected schedule completion rates as shown in **Table 2-11**, and projected boarding load factors as shown in **Table 2-12**.

Table 2-11: Projected Schedule Completion Rates and Seats

Month	Schedule Completion Rate			Projected Seats		
	Base	Low	High	Base	Low	High
Feb-23	100%	100%	100%	247,939	247,939	247,939
Mar-23	100%	100%	100%	276,732	276,732	276,732
Apr-23	100%	100%	100%	252,603	252,603	252,603
May-23	100%	97%	100%	163,152	158,257	163,152
Jun-23	100%	97%	100%	85,194	82,638	85,194
Jul-23	99%	96%	100%	80,528	78,087	81,341
Aug-23	96%	93%	99%	77,232	74,819	79,646

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Source: *Unison Consulting, Inc.*

Schedule completion rates are projected to decrease below 100 percent to anticipate cuts in airline schedules. The sub-100 percent schedule completion rate assumptions consider both airlines' practice of adjusting advance schedules—mostly downward—as flight dates get closer and external factors constrain airline capacity. Low and high projections of the rates anticipate different degrees by which supply-side issues—for example, pilot shortage, tight labor supply, inflation, and fleet constraints—could constrain airline capacity. Based on advance schedules published in April 2023, airlines are expected to complete at least 93 percent of their schedules through August 2023.

Table 2-12: Projected Boarding Load Factors

Actual Boarding Load Factors[1]			
Month	**2019**	**2022**	**Difference (pp)[2]**
Jan	68.53%	58.72%	-9.81
Feb	75.37%	74.97%	-0.41
Mar	83.95%	83.72%	-0.24
Apr	79.42%	82.46%	3.05
May	84.53%	83.66%	-0.86
Jun	86.18%	76.18%	-10.00
Jul	85.50%	71.35%	-14.15
Aug	82.52%	68.11%	-14.42
Sep	84.01%	74.09%	-9.92
Oct	79.16%	79.11%	-0.05
Nov	77.21%	77.74%	0.53
Dec	73.44%	68.10%	-5.35

Projected Boarding Load Factors[3]			
Month	**Base**	**Low**	**High**
Jan-23	67.62%	67.62%	67.62%
Feb-23	74.58%	74.58%	74.58%
Mar-23	85.12%	85.12%	85.12%
Apr-23	79.30%	77.28%	81.36%
May-23	84.69%	82.69%	86.69%
Jun-23	85.38%	83.38%	87.38%
Jul-23	83.93%	81.93%	85.93%
Aug-23	80.43%	78.43%	82.43%
Sep-23	85.53%	83.48%	87.62%
Oct-23	80.68%	78.64%	82.71%
Nov-23	79.67%	77.69%	81.65%
Dec-23	75.27%	73.25%	77.32%

Source: *Unison Consulting, Inc.*

Notes: *[1] Boarding load factors (BLF) = enplanements divided by available seats.*

[2] The column reports the percentage-point (pp) difference between 2019 and 2022 monthly boarding load factors. Negative values indicate lower 2022 levels, relative to the 2019 levels for the same months.

[3] BLF projections begin in March 2023.

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The boarding load factor assumptions reflect seasonal patterns as well as an overall improving trend. In 2022, monthly average boarding load factors were near or above 2019 levels around half of the months.[4] On average, monthly boarding load factors in 2022 were 5.1 percent points lower than 2019 levels, up from being 14 percentage points lower in 2021. Following these trends, the Base scenario assumes an improvement in monthly boarding load factors, nearing or exceeding 2019 levels from March 2023 through August 2023. By contrast, the Low scenario assumes that monthly boarding load factors remain around 2 percentage points lower than the 2019 levels over the same period. The High scenario assumes boarding load factors are around 2 percentage points higher than the 2019 levels.

Between September and December 2023, forecast development employs trend analysis to project enplanements for the remaining months of 2023. A trendline is fitted on monthly enplanements from April 2020, when they fell to their lowest level during the pandemic, to August 2023. We also fit a truncated trendline, which begins in June 2021 when monthly enplanements first exceeded 2019 levels. Both linear and logarithmic functional forms are evaluated to represent the Airport's air traffic trajectory. The linear function projects a steeper, straight-line growth trajectory. The logarithmic function projects an initial acceleration of growth and eventual tapering. The truncated logarithmic functional form is ultimately chosen, considering limiting factors on both the demand side (inflation and slowing economy) and the supply side (pilot shortage, staffing constraints due to tight labor supply, supply chain issues, and inflation).

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[4] The exceptions were January, June, July, August, September, and December.

In the Base scenario, monthly enplanements between September and December 2023 are assumed to hold steady at around 129 percent of 2019 levels, slightly above the January-August 2023 average (125.5 percent of 2019 levels). In the Low scenario, monthly enplanements are assumed to be 122 percent of 2019 levels through the remainder of 2023. In the High scenario, monthly enplanements are assumed to be 137 percent of 2019 levels through the remainder of 2023.

Long-Term Phase

Beyond 2023 marks the end of the near-term phase and the start of the long-term phase. In this phase, growth in passenger traffic is expected to be driven by the economics of air travel demand, assuming air travel supply would adjust to accommodate changes in demand. The effects of macroeconomic factors, air fare, and the residual impacts of the COVID-19 pandemic are accounted for via the projected trends in market demand drivers, which are sourced from independent forecasts by Moody's Analytics.

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Multivariate time series regression analysis is used to link enplanement growth to changes in key market demand drivers. In particular, multivariate time series regression analysis provides a quantitative framework for measuring the contributions of key demand drivers to passenger traffic, while accounting for structural changes, time-dependent trends, and serial correlation often found in time series data. Model estimation uses quarterly data from 1993Q1 through 2019Q4 to measure the historical relationships between enplanements and demand drivers.

Based on the economic theory of consumer demand, the main determinants of demand for air travel are trends in income and price of air travel. Income growth is driven by overall economic growth. Trends in the price of air travel reflect the effects of supply-side factors such as competition, input costs, and profit targets, and any constraints on capacity, among others. They also reflect any imbalances in air travel demand and supply.

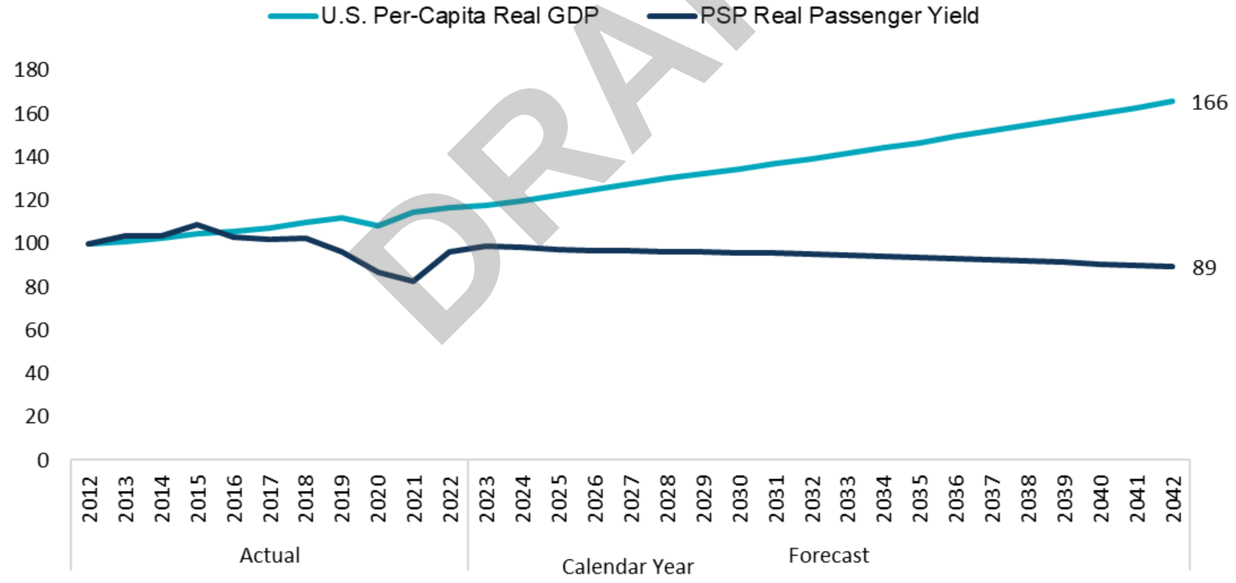
The regression model uses U.S. real GDP per capita as the economic indicator to measure income growth trends and the Airport's average real passenger yield as the price variable. The average passenger yield—calculated as the average fare per mile traveled—serves as a better measure of the price of air travel because it controls for trip distance. The historical and forecast trends in these variables are shown in **Figure 2-22**. U.S. real GDP per capita is expected to continue its (linear) upward trend, ending the forecast period 66 percent above the 2012 level. PSP's average real passenger yield is expected to resume its downward trend, which was briefly interrupted by the pandemic, and end the forecast period at around 89 percent of the 2012 level.

The model also controls for structural changes over the estimation period, such as the 9/11 terrorist attacks in 2001, quarterly enplanement patterns, and autoregressive and moving average terms commonly used to address serial correlation in time series data. Other variables were also tested, including U.S. unemployment rate, U.S. nonfarm employment, U.S. population, and MSA income per capita. These variables were ultimately omitted from the model as they failed to provide a better fit.

Forecasting using regression analysis is done in two steps. The first step is model estimation, and the second step is using the estimated model for prediction. Model estimation uses historical data to estimate regression coefficients for the explanatory variables discussed above. Regression coefficients measure the contribution of each explanatory variable to the dependent variable (quarterly enplanements). The result is a regression equation that is then used to calculate future values of the dependent variable given projected values for the explanatory variables.

The estimated regression equation meets statistical evaluation criteria for determining its suitability for forecasting. The regression equation yields statistically significant regression coefficients in the demand drivers and control variables. Importantly, all of the signs of the regression coefficients confirm their expected contributions to air travel demand: positive for the income variable and negative for the price variable and control for variable for the impact of the 9/11 terrorist attacks. The estimated regression equation also produces a high adjusted R-squared result—a value greater than 0.98—whereby an R-squared result of 1 indicates a perfect fit.[5]

Figure 2-22: Growth of Key Market Demand Drivers (2012 Level = 100)



Sources: *Unison Consulting, Inc., and Federal Aviation Administration.*

Notes: *Moody's Analytics for the forecasts of U.S. real GDP per capita and Consumer Price Index (CPI), and 2023-2043 FAA Aerospace Forecasts for PSP's nominal passenger yield. Conversion of nominal passenger yield to real passenger yield is based on Moody's forecast of CPI.*

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[5] The regression model with only the price variable, the income variable, the 9/11 indicator variable, and the quarterly indicator variable, already captures a high degree of variation in PSP's enplanement trends, yielding an adjusted R-squared of 0.9.

Commercial Passenger Traffic Forecast

Three forecast scenarios of annual commercial passenger enplanements from 2023 to 2042 are presented in this section. **Table 2-13** presents the forecast annual enplanements at five-year intervals over the forecast period, starting at 2027 and ending in 2042, and compares them with FAA's 2022 TAF (February 2023 publication). The corresponding forecast annual enplanements are detailed in **Figure 2-23**.

In all three scenarios, annual enplanements are expected to demonstrate robust growth over the forecast horizon. Scenario 2 (Base) is the recommended scenario and serves as the base scenario on which other scenarios are developed. Under the preferred Scenario 2 (Base), annual enplanements grow to 2.19 million enplanements by 2032 (70.0 percent above the 2019 level) and 2.88 million enplanements by 2042 (around 123.0 percent above the 2019 level). The 2022-2032 compounded annual growth rate is projected to be 3.84 percent, and the 2032-2042 compounded annual growth rate is projected to be 2.77 percent.

Compared to Scenario 2, Scenario 1 presents lower forecast enplanement levels and a slower pace of growth. Scenario 1 reflects a conservative outlook to anticipate downside risk factors, including a near-term recession in 2024, upward inflationary pressures, and dampened long-term economic growth. Under Scenario 2 (Low), annual enplanements grow to 2.01 million enplanements by 2032 (56.0 percent above the 2019 level) and 2.54 million enplanements by 2042 (97.5 percent above the 2019 level). The 2022-2032 compounded annual growth rate is 2.96 percent, and the 2032-2042 compounded annual growth rate is projected to be 2.39 percent.

Scenario 3 (High) presents the forecast associated with an optimistic economic outlook, including faster economic growth and lower inflationary pressures resulting in faster declines in real passenger yields. It also considers the expert input from Air Service Development consultants and the Airport regarding PSP's air service development initiatives and objectives. The initiatives include the conversion of current seasonal service into year-round service, the addition of new seasonal and year-round service, and the introduction of long-haul international flights to Europe. Annual enplanements are projected to be around 2.36 million in 2032 (82.9 percent above the 2019 level) and 3.22 million in 2042 (149.7 percent above the 2019 level). The 2022-2032 compounded annual growth rate is 4.61 percent, and the 2032-2042 compounded annual growth rate is projected to be 3.16 percent.

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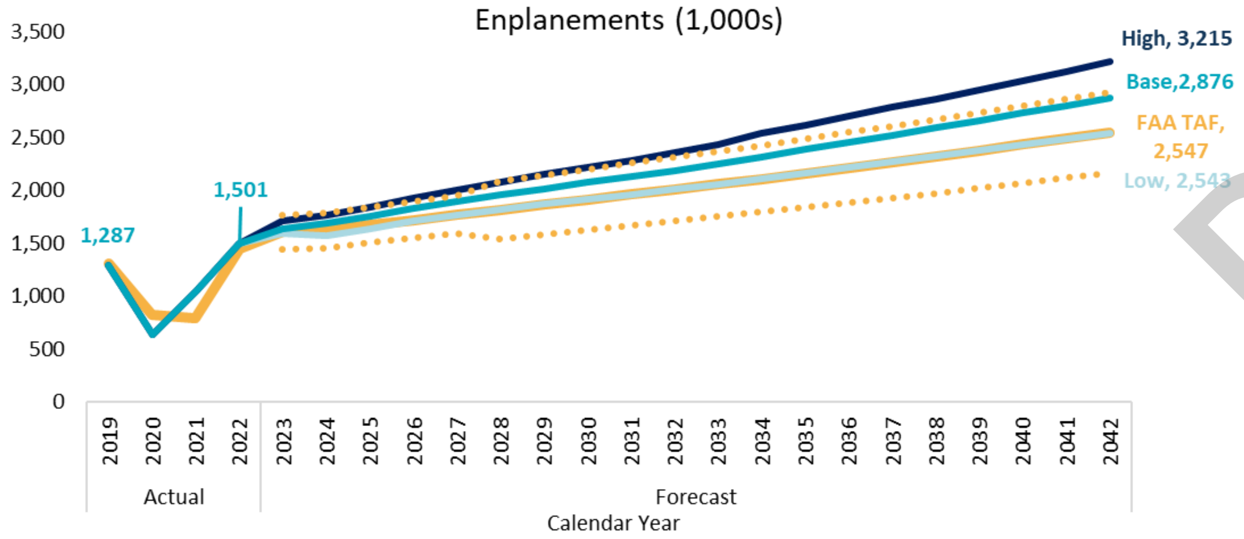
Table 2-13: Forecast Annual Commercial Enplanements by Calendar Year

	Actual				Forecast				Compound Annual Growth Rate			Percent of 2019 Level	
	2019	2020	2021	2022	2027	2032	2037	2042	2019-2022	2022-2032	2032-2042	2032	2042
Enplanements (1,000)													
Scenario 1 (Low)	1,287	632	1,048	1,501	1,768	2,009	2,269	2,543	5.24%	2.96%	2.39%	156.0%	197.5%
Scenario 2 (Base)	1,287	632	1,048	1,501	1,891	2,188	2,522	2,876	5.24%	3.84%	2.77%	170.0%	223.4%
Scenario 3 (High)	1,287	632	1,048	1,501	2,001	2,355	2,784	3,215	5.24%	4.61%	3.16%	182.9%	249.7%
FAA TAF	1,311	825	793	1,447	1,767	2,011	2,267	2,547	3.36%	3.34%	2.39%	153.4%	194.3%
Percent of FAA TAF													
Scenario 1 (Low)	98.2%	76.7%	132.2%	103.7%	100.1%	99.9%	100.1%	99.8%					
Scenario 2 (Base)	98.2%	76.7%	132.2%	103.7%	107.0%	108.8%	111.2%	112.9%					
Scenario 3 (High)	98.2%	76.7%	132.2%	103.7%	113.3%	117.1%	122.8%	126.2%					

Sources: *Historical data from Airport records, forecasts by Unison Consulting, Inc., and Federal Aviation Administration Terminal Area Forecasts as of February 2023.*

Note: *Terminal Area Forecasts data is on federal fiscal year ending in September.*

Figure 2-23: Forecast Annual Commercial Enplanements by Calendar Year



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Sources: *Historical data from Airport records, forecasts by Unison Consulting, Inc., and Federal Aviation Administration Terminal Area Forecasts as of February 2023.*

Notes: *Terminal Area Forecasts data is on federal fiscal year ending in September. Dashed lines indicate the range in which the FAA consider the forecasts to be consistent with the 2022 Terminal Area Forecast for PSP.*

Table 2-14 presents a summary of the forecast commercial aircraft operations (departures and arrivals) at five-year intervals over the forecast period, starting in 2027 and ending in 2042. The corresponding forecast trends for annual commercial passenger aircraft operations are presented in **Figure 2-24**. Over the long run, aircraft operations, generally, grow at a slower pace than enplanements due to the increases in average seats per flight and improvements in boarding load factors.

Scenario 1 (Low) projects annual aircraft operations will eventually reach 48,779 operations in 2042 (67.6 percent above the 2019 level). The 2019-2022 compounded annual growth rate was 3.76 percent, the 2022-2032 compounded annual growth rate is projected to be 2.05 percent, and the 2032-2042 compounded annual growth rate is projected to be 2.27 percent.

Scenario 2 (Base) projects annual aircraft operations will eventually reach 54,305 operations in 2042 (86.6 percent above the 2019 level). The 2022-2032 compounded annual growth rate is projected to be 2.60 percent, and the 2032-2042 compounded annual growth rate is projected to be 2.75 percent.

Scenario 3 (High) projects annual aircraft operations will eventually reach 59,014 operations in 2042 (102.8 percent above the 2019 level). The 2022-2032 compounded annual growth rate is projected to be 3.03 percent, and the 2032-2042 compounded annual growth rate is projected to be 3.12 percent.

With the increase in aircraft operations, air cargo is expected to rise at PSP. As PSP's air cargo is comprised mostly of belly cargo from Alaska Airlines, the forecast assumes that PSP's air cargo grows with the number of Alaska's aircraft operations at the Airport. By 2042, air cargo at PSP is expected to grow to 348.1 short tons in the Low scenario (60.8 percent above the 2019 level), 370.2 short tons in the Base scenario (71.1 percent above the 2019 level), and 397.4 short tons (83.6 percent above the 2019 level). **Table 2-15** and **Figure 2-25** summarize forecasted commercial aircraft cargo tonnage.

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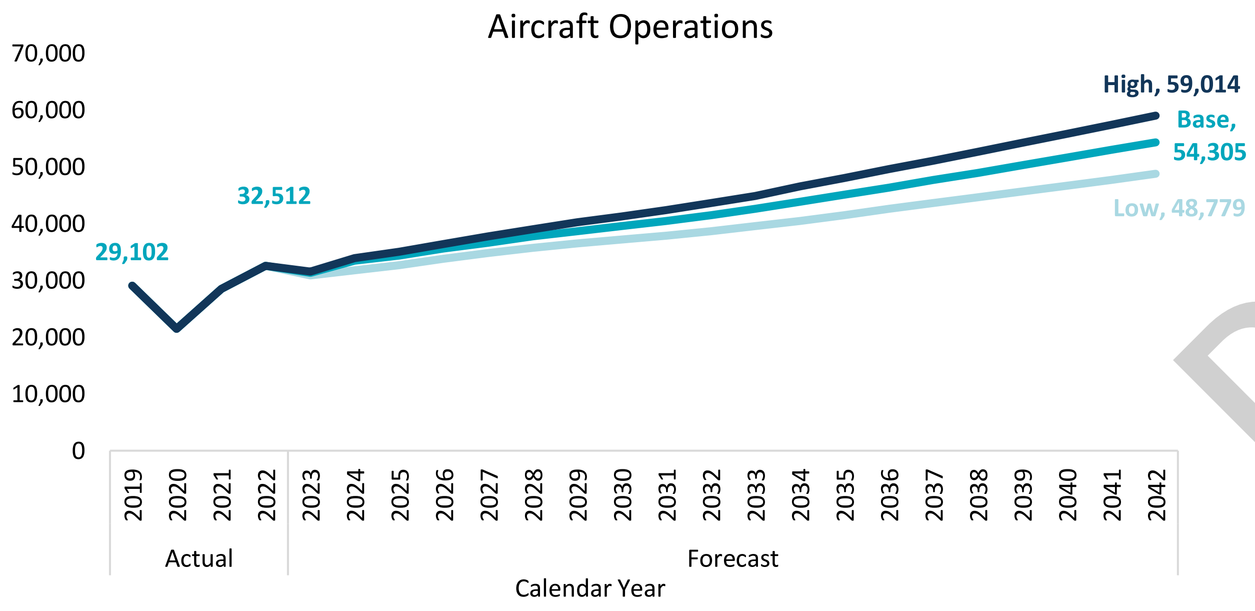
Table 2-14: Forecast Annual Commercial Passenger Aircraft Operations by Calendar Year

	Actual				Forecast				Compound Annual Growth Rate			Percent of 2019 Level	
	2019	2020	2021	2022	2027	2032	2037	2042	2019-2022	2022-2032	2032-2042	2032	2042
Aircraft Operations													
Scenario 1 (Low)	29,102	21,458	28,462	32,512	34,781	38,693	43,578	48,779	3.76%	2.05%	2.27%	133.0%	167.6%
Scenario 2 (Base)	29,102	21,458	28,462	32,512	36,618	41,483	47,665	54,305	3.76%	2.60%	2.75%	142.5%	186.6%
Scnario 3 (High)	29,102	21,458	28,462	32,512	37,760	43,587	51,072	59,014	3.76%	3.03%	3.12%	149.8%	202.8%
Percent of Scenario 2 (Base)													
Scenario 1 (Low)	100.0%	100.0%	100.0%	100.0%	95.0%	93.3%	91.4%	89.8%					
Scenario 3 (High)	100.0%	100.0%	100.0%	100.0%	103.1%	105.1%	107.1%	108.7%					

Sources: *Historical data from Airport record, OAG schedules, and forecasts by Unison Consulting, Inc.*

Notes: *Historical data are based on OAG schedules and do not include nonscheduled operations. They could overestimate the actual aircraft operations in 2020 due to elevated flight cancellations during the COVID-19 pandemic.*

Figure 2-24: Forecast Annual Commercial Passenger Aircraft Operations by Calendar Year



Sources: *Historical data from Airport records, OAG schedules, and forecasts by Unison Consulting, Inc.*

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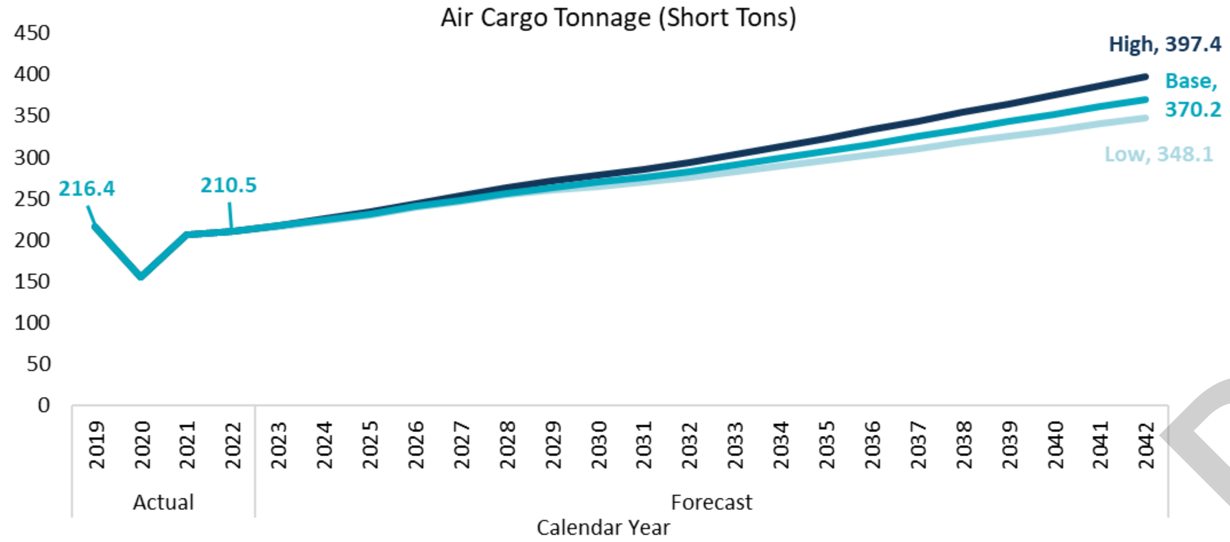
Table 2-15: Forecast Annual Commercial Passenger Aircraft Cargo (Short Tons) by Calendar Year

	Actual				Forecast				Compound Annual Growth Rate			Percent of 2019 Level	
	2019	2020	2021	2022	2027	2032	2037	2042	2019-2022	2022-2032	2032-2042	2032	2042
Cargo Tonnage (Short Tons)													
Scenario 1 (Low)	216.4	154.9	205.9	210.5	246.9	275.9	310.9	348.1	-0.91%	2.74%	2.35%	127.5%	160.8%
Scenario 2 (Base)	216.4	154.9	205.9	210.5	248.4	282.7	324.9	370.2	-0.91%	2.99%	2.74%	130.6%	171.1%
Scenario 3 (High)	216.4	154.9	205.9	210.5	253.2	293.9	343.5	397.4	-0.91%	3.39%	3.06%	135.8%	183.6%
Percent of Base Scenario													
Scenario 1 (Low)	100.0%	100.0%	100.0%	100.0%	99.4%	97.6%	95.7%	94.0%					
Scenario 3 (High)	100.0%	100.0%	100.0%	100.0%	102.0%	104.0%	105.7%	107.3%					

Sources: *Historical data from Airport records, OAG schedule, and forecasts by Unison Consulting, Inc.*

Figure 2-25: Forecast Annual Commercial Passenger Aircraft Cargo (Short Tons) by Calendar Year



Sources: *Historical data from Airport records, OAG schedules, and forecasts by Unison Consulting, Inc.*

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Projections of aircraft operations are derived from forecast enplanements, along with projections of aircraft fleet mix, seats per aircraft operation, and boarding load factors at the airline level. Specifically, forecast enplanements and average boarding load factor determine the number of seats needed to accommodate forecast enplanements. The forecast number of seats and seats per aircraft operation determine the number of aircraft operations. The projected trends in boarding load factors follow the projected industry trends for the 2023-2043 FAA Aerospace Forecasts, rising slightly throughout the forecast horizon. Projections of the average number of seats per aircraft operation are derived from the projections of airlines' fleet composition.

As airlines recover from the pandemic and restore flight operations, boarding load factors, which fell sharply during the pandemic, are projected to return to pre-COVID levels and continue to increase at diminishing rates thereafter. Over the long run, the average boarding load factor per aircraft operation is expected to rise above the 2019 level of 78.6 percent. It is expected to converge to 80.1 percent in Scenario 1 (Low), 81.4 percent in Scenario 2 (Base), and 82.6 percent in Scenario 3 (High). **Figure 2-26** presents the trends in average boarding load factor per scheduled aircraft operation.

Figure 2-26: Scheduled Commercial Passenger Service Average Boarding Load Factor per Aircraft Operation

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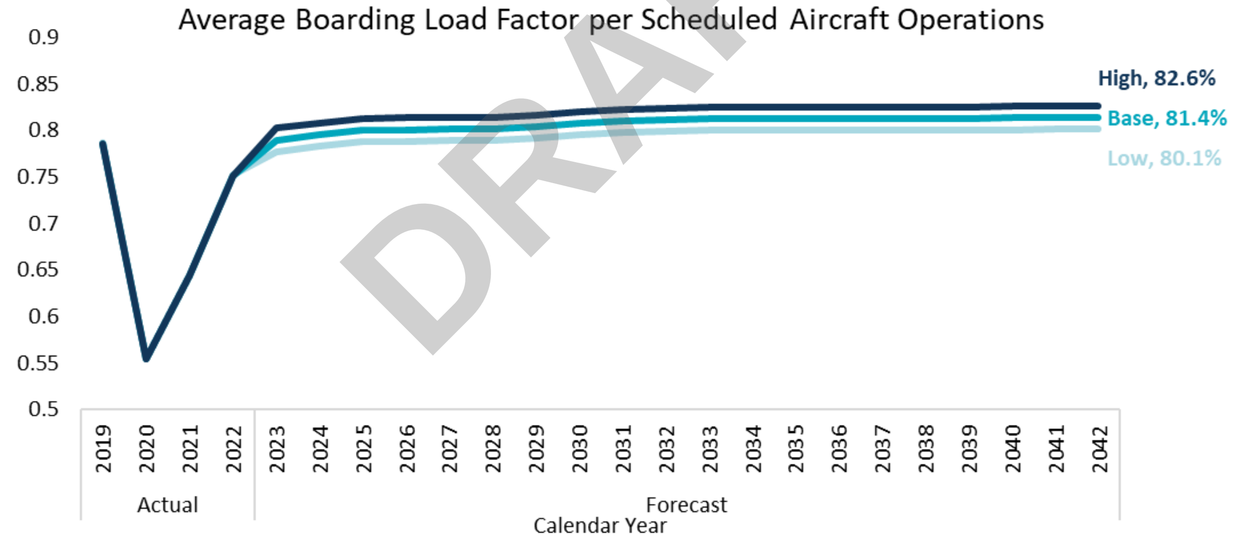

Sources: *Historical data from Airport records, OAG schedules, and forecasts by Unison Consulting, Inc.*

The number of seats per aircraft operation is also projected to increase over time as airlines renew their depreciated fleets with larger aircraft—a process known as fleet up-gauging.[6] The pandemic has accelerated fleet up-gauging as airlines retire older aircraft and replace them with newer aircraft models that are not only more fuel efficient but also with higher seat capacity. These industry-level changes are reflected in the forecast fleet composition at PSP.

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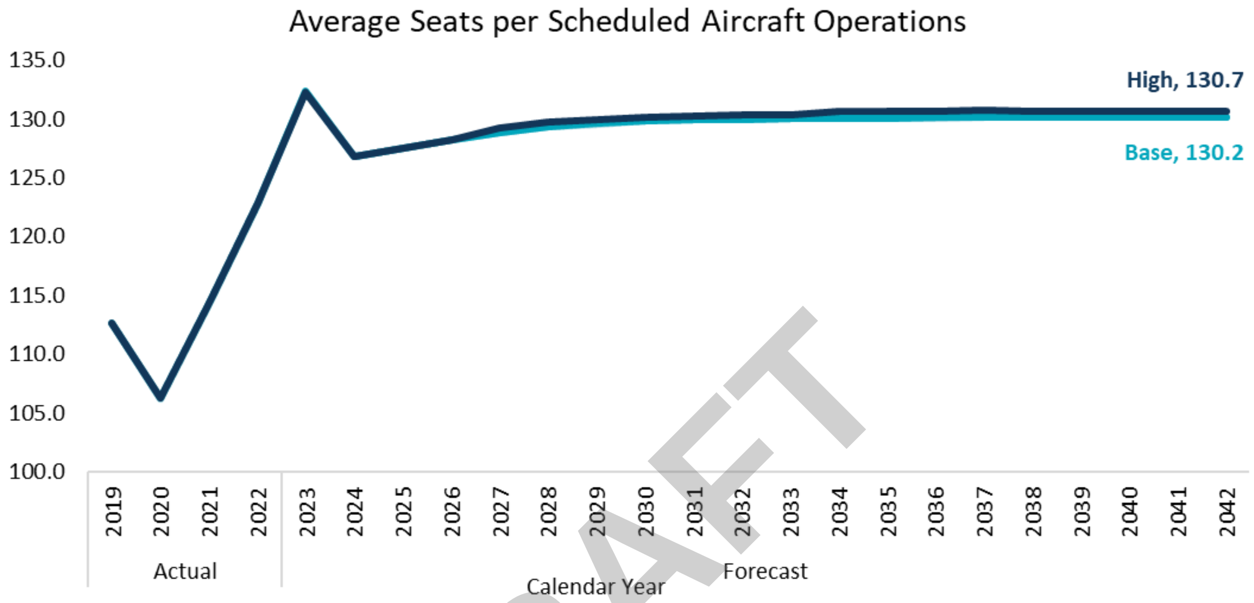
[6] Fleet up-gauging was a common strategy among airlines following the Great Recession as a way to reduce maintenance cost and increase operation efficiency.

Average seat capacity per operation is similar between the Base and Low scenarios and is projected to increase gradually from 126.8 in 2024 to 130.2 in 2042. Under the High scenario, the average seat capacity is expected to be higher with the introduction of widebody jets, rising to 130.7 by the end of 2042. **Figure 2-27** presents the trends in average seats per scheduled aircraft operations.

Figure 2-27: Scheduled Commercial Passenger Service Average Seats per Aircraft Operation



Sources: *Historical data from Airport records, OAG schedules, and forecasts by Unison Consulting, Inc.*

Note: *The figure does not include data from the Low scenario, which is similar to the Base scenario and converges to 130.1 average seats per scheduled aircraft operations by 2042.*

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Table 2-16 summarizes the composition of scheduled commercial passenger operations by equipment group. In 2022, the two primary equipment groups at the Airport were narrowbody jets (18,774 operations and 57.7 percent of total operations) and regional jets (13,738 operations and 42.3 percent of total operations). In all three scenarios, the share of operations performed by narrowbody jets is expected to grow to around 62 percent by the end of 2042, with the share of operations performed by regional jets fall to around 38 percent. In the High scenario, the share of operations performed by widebody jet is expected to be around 0.4-0.7 percent beginning in 2027.

Table 2-16: Scheduled Commercial Passenger Operations by Equipment Group

	Actual				Scenario 1 (Low)				Scenario 2 (Base)				Scenario 3 (High)			
	2019	2020	2021	2022	2027	2032	2037	2042	2027	2032	2037	2042	2027	2032	2037	2042
Passenger Airline Fleet Composition																
Narrowbody Jet	14,938	9,754	14,300	18,774	21,508	23,928	26,955	30,177	22,641	25,650	29,480	33,591	23,221	26,823	31,347	36,261
Regional Jet	14,164	11,192	13,988	13,738	13,273	14,765	16,623	18,602	13,977	15,833	18,185	20,714	14,365	16,591	19,378	22,406
Turboprop Jet	0	512	174	0	0	0	0	0	0	0	0	0	0	0	0	0
Widebody Jet	0	0	0	0	0	0	0	0	0	0	0	0	173	173	347	347
Total	**29,102**	**21,458**	**28,462**	**32,512**	**34,781**	**38,693**	**43,578**	**48,779**	**36,618**	**41,483**	**47,665**	**54,305**	**37,760**	**43,587**	**51,072**	**59,014**
Percentage of Total Aircraft Operations																
Narrowbody Jet	51.3%	45.5%	50.2%	57.7%	61.8%	61.8%	61.9%	61.9%	61.8%	61.8%	61.8%	61.9%	61.5%	61.5%	61.4%	61.4%
Regional Jet	48.7%	52.2%	49.1%	42.3%	38.2%	38.2%	38.1%	38.1%	38.2%	38.2%	38.2%	38.1%	38.0%	38.1%	37.9%	38.0%
Turboprop Jet	0.0%	2.4%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Widebody Jet	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	0.4%	0.7%	0.6%

Sources: *Historical data from Airport records, OAG schedules, and forecasts by Unison Consulting, Inc.*

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Table 2-17 decomposes further the projected distribution of commercial passenger aircraft operations by aircraft type (fleet mix). Fleet mix projections are developed at the airline level and are aggregated here for ease of interpretation. They determine the annual average number of seats per aircraft operation, one of the measures that link forecast enplanements to forecast aircraft operations.

Fleet mix projections reflect recent and planned changes in individual airline fleets. Aircraft retirement and replacement consider the composition of each airline's fleet, expected new aircraft deliveries, planned new purchases, average age of specific aircraft types, and the assumption of a 25-year depreciation period. Retired aircraft are replaced by newer aircraft closest in seat capacity (gauge). For instance, A320neo, A321neo, and B737 MAX are expected to gradually replace the aging A320, A321, and B737 fleets, respectively.[7] Regardless of age, aircraft models expected to remain in production over the forecast horizon are retained, assuming they will be replaced by future deliveries of the same model.

When fully depreciated aircraft have no same-model replacements, they are replaced with newer models closest in seat capacity. For instance, 50-seat regional jets are replaced with 76-seat regional jets. In these instances, the forecast assumes that airlines up-gauge, raising the annual average number of seats per aircraft operation, and thus reducing the number of projected annual operations.

Table 2-18 presents estimates of commercial passenger aircraft operations (arrivals and departures) during the peak month (March), the peak month average day (PMAD), and the PMAD peak hour.

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[7] Excepted replacement aircraft and timeframes are based on analysis of annual reports by airlines and aircraft manufacturers.

Table 2-17: Scheduled Commercial Passenger Operations by Airline Fleet Composition

	Actual				Scenario 1 (Low)				Scenario 2 (Base)				Scenario 3 (High)			
Aircraft Name	**2019**	**2020**	**2021**	**2022**	**2027**	**2032**	**2037**	**2042**	**2027**	**2032**	**2037**	**2042**	**2027**	**2032**	**2037**	**2042**
Domestic	**25,542**	**19,958**	**27,622**	**29,980**	**31,511**	**35,050**	**38,913**	**43,135**	**33,222**	**37,689**	**42,754**	**48,298**	**34,106**	**39,473**	**45,565**	**52,284**
Airbus A220-100	0	0	190	316	355	397	444	493	373	426	486	551	383	445	518	596
Airbus A220-300	0	0	0	0	155	177	197	220	163	189	216	245	167	198	230	265
Airbus A318/319/320/321	206	112	20	8	3	0	0	0	3	0	0	0	3	0	0	0
Airbus A319	1,862	1,974	1,714	1,242	329	368	411	459	345	393	449	510	353	410	477	551
Airbus A320	3,336	1,160	848	1,662	292	165	184	206	307	178	204	232	318	192	224	258
Airbus A320neo	0	0	0	0	436	486	544	607	461	524	599	681	474	550	640	740
Airbus A321	294	68	364	920	682	381	2	3	721	411	2	3	742	432	3	3
Airbus A321-200neo	0	0	0	0	451	821	1,087	1,360	471	875	1,186	1,512	482	912	1,258	1,630
Airbus A321neo	2,358	1,232	1,934	1,602	1,463	2,006	2,674	2,983	1,543	2,159	2,941	3,343	1,586	2,264	3,140	3,625
Boeing 717-200	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Boeing 737-700	312	20	306	1,230	1,032	422	474	528	1,085	451	517	588	1,108	468	547	631
Boeing 737-800	1,420	1,714	4,744	6,022	6,105	3,875	1,749	655	6,437	4,163	1,915	725	6,589	4,344	2,030	778
Boeing 737-900	1,580	1,884	3,280	2,962	1,646	1,187	591	0	1,736	1,277	650	0	1,786	1,340	694	0
Boeing 737MAX 7	0	0	0	0	821	1,621	1,743	1,895	866	1,744	1,916	2,123	886	1,819	2,033	2,289
Boeing 737MAX 8	0	0	60	104	2,993	6,103	9,117	11,265	3,158	6,568	10,027	12,625	3,237	6,867	10,665	13,637
Boeing 737MAX 9	0	0	0	174	1,438	2,177	3,027	3,885	1,517	2,343	3,329	4,355	1,561	2,460	3,556	4,725
Boeing 757	0	90	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Canadair Regional Jet	3,302	1,974	1,990	1,788	282	0	0	0	297	0	0	0	305	0	0	0
Canadair Regional Jet 700	2,844	2,412	3,222	2,536	1,014	0	0	0	1,070	0	0	0	1,100	0	0	0
Canadair Regional Jet 900	3,314	1,158	982	442	316	156	0	0	334	169	0	0	344	177	0	0
Embraer 175	4,494	5,428	7,794	8,810	11,698	14,710	16,668	18,578	12,335	15,821	18,317	20,806	12,683	16,594	19,550	22,556
Embraer RJ 135/140/145	210	220	0	162	0	0	0	0	0	0	0	0	0	0	0	0
Pilatus PC-12	0	512	174	0	0	0	0	0	0	0	0	0	0	0	0	0
International	**3,560**	**1,500**	**840**	**2,532**	**3,479**	**3,814**	**4,282**	**4,775**	**3,662**	**4,094**	**4,696**	**5,337**	**3,939**	**4,467**	**5,358**	**6,132**
Airbus A319	182	216	0	38	19	0	0	0	20	0	0	0	20	0	0	0
Airbus A320	128	68	0	4	2	0	0	0	2	0	0	0	2	0	0	0
Airbus A321	26	12	0	14	50	77	87	97	52	82	94	107	53	85	99	115
Boeing 737-400	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Boeing 737-600	204	54	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Boeing 737-700	1,552	742	500	1,478	969	0	0	0	1,024	0	0	0	1,056	0	0	0
Boeing 737-800	1,082	408	10	60	0	0	0	0	0	0	0	0	0	0	0	0
Boeing 737MAX 8	368	0	330	938	2,439	3,736	4,195	4,678	2,564	4,012	4,602	5,230	2,634	4,208	4,912	5,670
Boeing 787-800	0	0	0	0	0	0	0	0	0	0	0	0	173	173	347	347
Total	**29,102**	**21,458**	**28,462**	**32,512**	**34,990**	**38,864**	**43,194**	**47,910**	**36,884**	**41,783**	**47,450**	**53,634**	**38,045**	**43,939**	**50,923**	**58,415**

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Source: *Unison Consulting, Inc.*

Note: *Fleet detail by airline is available.*

Table 2-18: Peak Month Average Day Peak Hour Commercial Passenger Aircraft Operations

	Actual	Forecast			
	2022	2027	2032	2037	2042
Scenario 1 (Low)					
Annual Operations	32,512	34,781	38,693	43,578	48,779
Peak Month Share of Annual Operations	11.5%	11.5%	11.5%	11.5%	11.5%
Peak Month Total Operations	3,734	3,995	4,444	5,005	5,603
Peak Month Average Day (PMAD) Operations	120	129	143	161	181
Peak Hour Share of PMAD Operations	14.4%	14.4%	14.4%	14.4%	14.4%
PMAD Peak Hour Total Operations	536	573	638	718	804
PMAD Average Peak Hour Operations	17	18	21	23	26
Scenario 2 (Base)					
Annual Operations	32,512	36,618	41,483	47,665	54,305
Peak Month Share of Annual Operations	11.5%	11.5%	11.5%	11.5%	11.5%
Peak Month Total Operations	3,734	4,206	4,765	5,475	6,237
Peak Month Average Day (PMAD) Operations	120	136	154	177	201
Peak Hour Share of PMAD Operations	14.4%	14.4%	14.4%	14.4%	14.4%
PMAD Peak Hour Total Operations	536	604	684	786	895
PMAD Average Peak Hour Operations	17	19	22	25	29
Scenario 3 (High)					
Annual Operations	32,512	37,760	43,587	51,072	59,014
Peak Month Share of Annual Operations	11.5%	11.5%	11.5%	11.5%	11.5%
Peak Month Total Operations	3,734	4,337	5,006	5,866	6,778
Peak Month Average Day (PMAD) Operations	120	140	161	189	219
Peak Hour Share of PMAD Operations	14.4%	14.4%	14.4%	14.4%	14.4%
PMAD Peak Hour Total Operations	536	622	718	842	973
PMAD Average Peak Hour Operations	17	20	23	27	31

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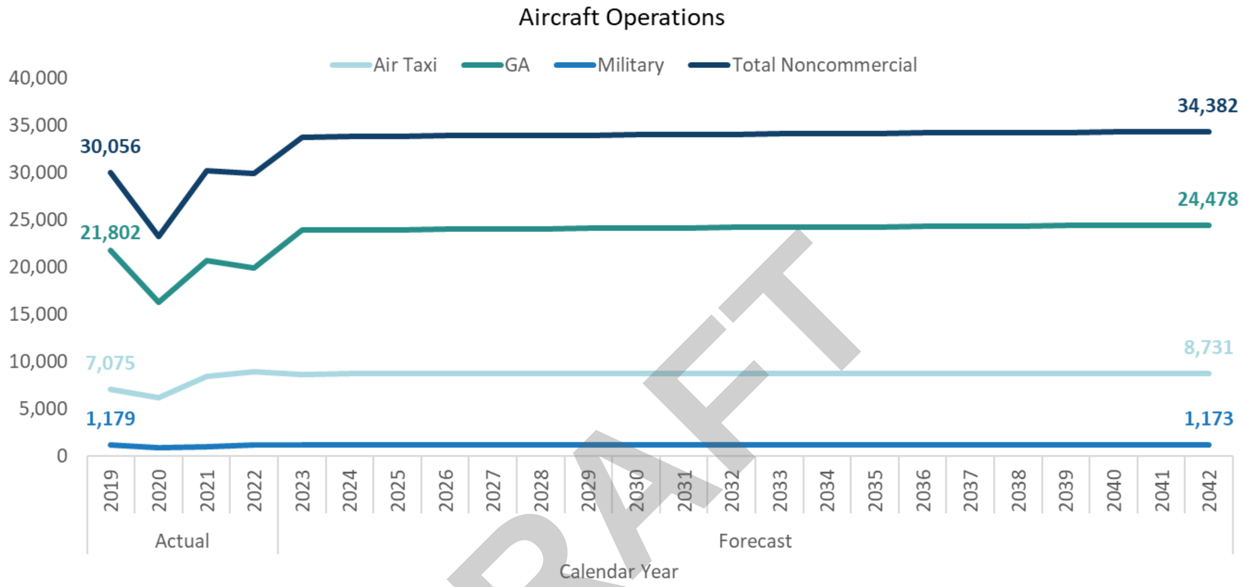
Sources: *Historical data from Airport records, OAG schedules, and forecasts by Unison Consulting, Inc.*

NONCOMMERCIAL AVIATION ACTIVITY – FORECASTS

Figure 2-28 summarizes the forecasts for GA, military, and air taxi operations. Overall, total noncommercial aircraft operations, including air taxi and military aircraft operations, are expected to stay stable over the forecast period. Based aircraft (not shown) are expected to increase by 2 annually from 76 in 2023 (Airport Data and Information Portal, accessed in March 2023) to 114 by 2042.

Figure 2-28: Forecast Noncommercial Aircraft Operations by Calendar Year



Sources: *2022-2042 FAA Terminal Area Forecasts, Airport Data and Information Portal (ADIP), and forecasts by Unison Consulting, Inc.*

Notes: *Based aircraft, which is not shown, is expected to increase from 76 in 2023 to 114 in 2042.*

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FORECAST SUMMARY AND COMPARISON WITH TAF

Table 2-19, **Table 2-20**, and **Table 2-21** summarize the forecasts of air traffic measures for commercial passenger service and noncommercial aviation activity for 2027, 2032, 2037, and 2042 and compare the totals with FAA's TAF as of February 2023.

Under Scenario 1 (Low), the total enplanements are similar to the FAA TAF through 2042. The forecast total aircraft operations are 2 percent lower in 2027, 4 percent lower in 2032 and 2037, and 5 percent lower in 2042. Scenario 1 (Low) is recommended for financial planning sensitivity analysis.

Under Scenario 2 (Base), relative to the TAF, the forecast total enplanements are 7 percent higher in 2027, 9 percent higher in 2032, 11 percent higher in 2037, and 13 percent higher in 2042. The forecast total aircraft operations are similar to the FAA TAF forecasts in 2027 and 2032 and around 1 percent higher in 2037 and 2042. Scenario 2 (Base) is the recommended Master Plan base forecast scenario for FAA approval.

Under Scenario 3 (High), relative to the TAF, the forecast total enplanements are 13 percent higher in 2027, 17 percent higher in 2032, 23 percent higher in 2037, and 26 percent higher in 2042. The forecast total aircraft operations are 3 percent higher in 2027 and 2032, 5 percent higher in 2037, and 7 percent higher in 2042. Scenario 3 (High) is recommended as the high scenario for terminal planning.

The based aircraft forecasts are the same in all three scenarios. They are lower than the TAF mainly because the actual number of based aircraft at PSP in 2023 is significantly lower than predicted in the TAF (69 actual versus 84 predicted by the TAF). The based aircraft forecasts are 9 percent lower in 2027, 8 percent lower in 2032, 7 percent lower in 2037 and 2042.

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Table 2-19: Forecast Enplanements and Aircraft Operations Compared with TAF – Scenario 1 (Low)

Scenario 1 (Low)	Actual				Forecast				Compound Annual Growth Rate			Percent of 2019 Level	
	2019	2020	2021	2022	2027	2032	2037	2042	2019-2022	2022-2032	2032-2042	2032	2042
Commercial Passenger Service													
Enplaned Passengers (1,000s)	1,287	632	1,048	1,501	1,768	2,009	2,269	2,543	5.2%	3.0%	2.4%	156.0%	197.5%
FAA TAF	1,311	825	793	1,447	1,767	2,011	2,267	2,547	3.4%	3.3%	2.4%	153.4%	194.3%
Percent of TAF	98.2%	76.7%	132.2%	103.7%	100.1%	99.9%	100.1%	99.8%					
Aircraft Operations													
Commercial Passenger Carriers	29,102	21,458	28,462	32,512	34,781	38,693	43,578	48,779	3.8%	1.8%	2.3%	133.0%	167.6%
Air Taxi	7,075	6,130	8,448	8,872	8,726	8,731	8,731	8,731	7.8%	-0.2%	0.0%	123.4%	123.4%
General Aviation	21,802	16,294	20,736	19,927	24,043	24,188	24,333	24,478	-3.0%	2.0%	0.1%	110.9%	112.3%
Military	1,179	868	1,012	1,174	1,173	1,173	1,173	1,173	-0.1%	0.0%	0.0%	99.5%	99.5%
Total	**59,158**	**44,750**	**58,658**	**62,485**	**68,723**	**72,784**	**77,815**	**83,160**	**1.8%**	**1.5%**	**1.3%**	**123.0%**	**140.6%**
FAA TAF	60,240	45,555	52,725	63,467	69,963	75,481	81,229	87,498	1.8%	1.7%	1.5%	125.3%	145.2%
Percent of TAF	98.2%	98.2%	111.3%	98.5%	98.2%	96.4%	95.8%	95.0%					
Based Aircraft													
Number of Based Aircraft	81	81	81	83	84	94	104	114	0.8%	1.3%	1.9%	116.0%	140.7%
FAA TAF	81	81	81	83	92	102	112	122	0.8%	2.1%	1.8%	125.9%	150.6%
Percent of TAF	100.0%	100.0%	100.0%	100.0%	91.3%	92.2%	92.9%	93.4%					

Sources: *Historical data from Airport records, FAA ATADS and TAF, T100 data, and forecasts by Unison Consulting, Inc.*

Note: *TAF data is based on federal fiscal year ending in September.*

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Table 2-20: Forecast Enplanements and Aircraft Operations Compared with TAF – Scenario 2 (Base)

Scenario 2 (Base)	Actual				Forecast				Compound Annual Growth Rate			Percent of 2019 Level	
	2019	2020	2021	2022	2027	2032	2037	2042	2019-2022	2022-2032	2032-2042	2032	2042
Commercial Passenger Service													
Enplaned Passengers (1,000s)	1,287	632	1,048	1,501	1,891	2,188	2,522	2,876	5.2%	3.8%	2.8%	170.0%	223.4%
FAA TAF	1,311	825	793	1,447	1,767	2,011	2,267	2,547	3.4%	3.3%	2.4%	153.4%	194.3%
Percent of TAF	98.2%	76.7%	132.2%	103.7%	107.0%	108.8%	111.2%	112.9%					
Aircraft Operations													
Commercial Passenger Carriers	29,102	21,458	28,462	32,512	36,618	41,483	47,665	54,305	3.8%	2.5%	2.7%	142.5%	186.6%
Air Taxi	7,075	6,130	8,448	8,872	8,726	8,731	8,731	8,731	7.8%	-0.2%	0.0%	123.4%	123.4%
General Aviation	21,802	16,294	20,736	19,927	24,043	24,188	24,333	24,478	-3.0%	2.0%	0.1%	110.9%	112.3%
Military	1,179	868	1,012	1,174	1,173	1,173	1,173	1,173	-0.1%	0.0%	0.0%	99.5%	99.5%
Total	**59,158**	**44,750**	**58,658**	**62,485**	**70,561**	**75,575**	**81,902**	**88,687**	**1.8%**	**1.9%**	**1.6%**	**127.8%**	**149.9%**
FAA TAF	60,240	45,555	52,725	63,467	69,963	75,481	81,229	87,498	1.8%	1.7%	1.5%	125.3%	145.2%
Percent of TAF	98.2%	98.2%	111.3%	98.5%	100.9%	100.1%	100.8%	101.4%					
Based Aircraft													
Number of Based Aircraft	81	81	81	83	84	94	104	114	0.8%	1.3%	1.9%	116.0%	140.7%
FAA TAF	81	81	81	83	92	102	112	122	0.8%	2.1%	1.8%	125.9%	150.6%
Percent of TAF	100.0%	100.0%	100.0%	100.0%	91.3%	92.2%	92.9%	93.4%					

Sources: *Historical data from Airport records, FAA ATADS and TAF, T100 data, and forecasts by Unison Consulting, Inc.*

Note: *TAF data is based on federal fiscal year ending in September.*

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Table 2-21: Forecast Enplanements and Aircraft Operations Compared with TAF – Scenario 3 (High)

Scenario 3 (High)	Actual				Forecast				Compound Annual Growth Rate			Percent of 2019 Level	
	2019	2020	2021	2022	2027	2032	2037	2042	2019-2022	2022-2032	2032-2042	2032	2042
Commercial Passenger Service													
Enplaned Passengers (1,000s)	1,287	632	1,048	1,501	2,001	2,355	2,784	3,215	5.2%	4.6%	3.2%	182.9%	249.7%
FAA TAF	1,311	825	793	1,447	1,767	2,011	2,267	2,547	3.4%	3.3%	2.4%	153.4%	194.3%
Percent of TAF	98.2%	76.7%	132.2%	103.7%	113.3%	117.1%	122.8%	126.2%					
Aircraft Operations													
Commercial Passenger Carriers	29,102	21,458	28,462	32,512	37,760	43,587	51,072	59,014	3.8%	3.0%	3.1%	149.8%	202.8%
Air Taxi	7,075	6,130	8,448	8,872	8,726	8,731	8,731	8,731	7.8%	-0.2%	0.0%	123.4%	123.4%
General Aviation	21,802	16,294	20,736	19,927	24,043	24,188	24,333	24,478	-3.0%	2.0%	0.1%	110.9%	112.3%
Military	1,179	868	1,012	1,174	1,173	1,173	1,173	1,173	-0.1%	0.0%	0.0%	99.5%	99.5%
Total	**59,158**	**44,750**	**58,658**	**62,485**	**71,702**	**77,679**	**85,309**	**93,395**	**1.8%**	**2.2%**	**1.9%**	**131.3%**	**157.9%**
FAA TAF	60,240	45,555	52,725	63,467	69,963	75,481	81,229	87,498	1.8%	1.7%	1.5%	125.3%	145.2%
Percent of TAF	98.2%	98.2%	111.3%	98.5%	102.5%	102.9%	105.0%	106.7%					
Based Aircraft													
Number of Based Aircraft	81	81	81	83	84	94	104	114	0.8%	1.3%	1.9%	116.0%	140.7%
FAA TAF	81	81	81	83	92	102	112	122	0.8%	2.1%	1.8%	125.9%	150.6%
Percent of TAF	100.0%	100.0%	100.0%	100.0%	91.3%	92.2%	92.9%	93.4%					

Sources: *Historical data from Airport records, FAA ATADS and TAF, T100 data, and forecasts by Unison Consulting, Inc.*

Note: *TAF data is on federal fiscal year ending in September.*

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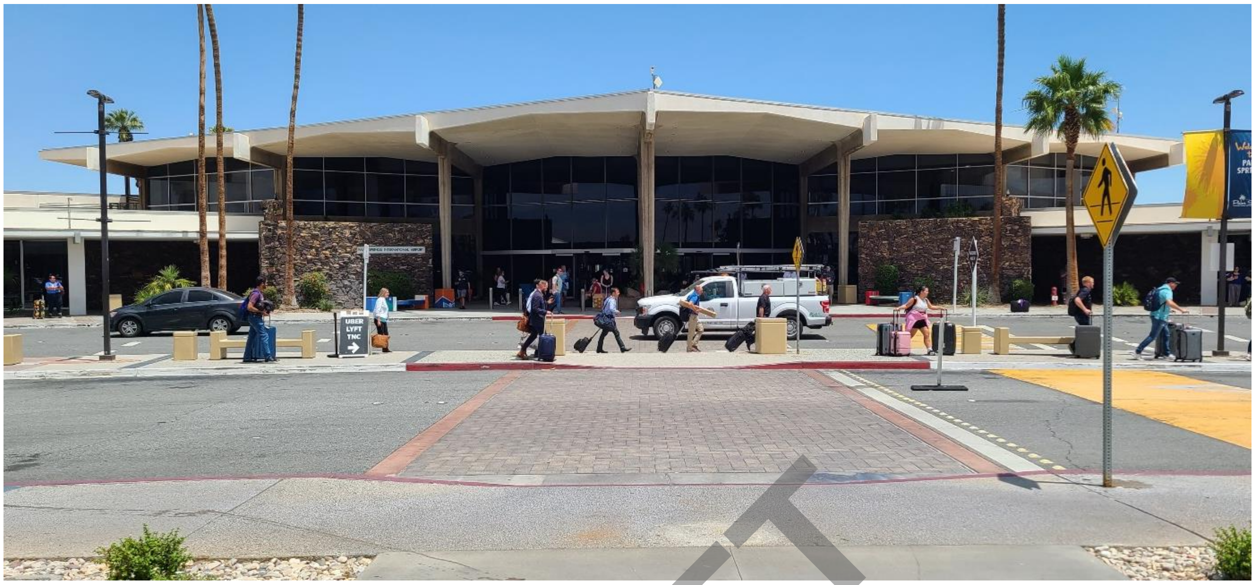
Chapter 3 – Terminal Area Facility Requirements



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INTRODUCTION

This chapter summarizes assumptions used to develop facility requirements for the key functional areas of the terminal building. Terminal facility requirements were developed based on meetings and surveys with Palm Springs International Airport (Airport or PSP) staff, Transportation Security Administration (TSA), concessionaires, airlines, and rental car companies, a walk-through site evaluation, knowledge of industry-wide trends, and published guidelines. Facility requirements were generated for aircraft parking positions/gates, ticketing area and airline ticket offices, passenger security screening, departure lounges, concessions, restrooms, baggage handling systems and baggage makeup areas, baggage claim, and airport administrative areas. Terminal facility requirements are developed for the peak hour, identified in the forecast section of this document to determine the Airport's needs to accommodate future growth. Analysis also considered secondary functions such as circulation, building systems, administrative areas, and support areas. Additionally, the terminal facility requirements include requirements for the terminal curbfront, parking facilities, and rental car facilities.

Assumptions and Methodologies

This section assesses the capability of the existing terminal facility to accommodate forecast peak hour demand. This section describes the assumptions that inform the models used to establish characteristics (or attributes) and processing rates specific to PSP. The following industry references and standards are the basis for the assumptions used:

- Airport Development Reference Manual (ADRM) 12TH Edition, 2022; International Air Transportation Association

- FAA Advisory Circular 150/5360-13A: Airport Terminal Planning and Reference Materials
- Airport Cooperative Research Program (ACRP) Report 25: *Airport Passenger Terminal Planning and Design* and references.
- ACRP Report 226: Planning and Design of Airport Terminal Restrooms and Ancillary Spaces
- ACRP Report 54: *Resource Manual for Airport In-Terminal Concessions*
- TSA Checkpoint Requirements and Planning Guide, 2022
- TSA Planning Guidelines and Design Standards for Checked Baggage Inspection Systems, Version 7.0, August 21, 2020

Planning Activity Levels

For the purposes of master planning, the requirements presented herein are tied to four Planning Activity Levels (PALs). The use of PALs rather than years provides PSP with flexibility to plan for implementation of future projects based on actual growth in traffic, rather than a point in time. **Table 3-1** shows the associated activity levels for each PAL**.** The PALs were selected based on design day flight schedules (DDFS) created from the forecasts presented in *Chapter 2, Aviation Activity Forecasts.* The various DDFS for each PAL shows how PSP's daily activity can grow over time. Projecting the type of growth in the design day daily activity came from discussions with the Airport's air service development team, benchmarking peer airports that are currently serving the type of demand PSP is projected to have, and evaluating the most demanded, unserved markets from PSP. The type of growth to the future design days included:

- **Up-gauge in aircraft type:** As seen across the industry, flights currently being operated on regional jets and older mainline aircraft were assumed to be up-gauged to newer aircraft.
- **Added frequency to currently served markets**: PSP currently serves all of the main hubs for the legacy carriers (American Airlines, United Airlines, Delta Air Lines) in the Midwest and West coast. For the future DDFS, it was assumed daily frequency would be added to these hubs.
- **New markets served**: Through consultation with PSP's air service group, new domestic and international markets were added to the future design day with existing and new carriers.

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Table 3-1: Planning Activity Levels

	Existing	PAL[1] 1	PAL* 2	PAL* 3	PAL* 4
Million Annual Passengers (MAP)	3,000,000	4,000,000	4,700,000	5,400,000	6,400,000
Total Annual Commercial Operations	32,512	38,000	44,000	52,000	60,000
Peak Hour Departing Time	12:45-13:40	12:45-13:40	12:45-13:40	12:45-13:40	12:20-13:15
Peak Hour Departing Operations	13	15	15	17	18
Peak Hour Enplanements	1,589	1,727	1,757	2,008	2,163
Peak Hour Arrivals Time	11:40-12:35	11:40-12:35	11:41-12:40	11:50-12:45	11:41-12:40
Peak Hour Arriving Operations	13	15	16	18	22
Peak Hour Deplanements	1,638	1,773	1,908	2,224	2,567
Peak Hour Total Time	11:50-12:45	12:10-13:05	12:10-13:05	12:10-13:05	12:20-13:15
Peak Hour Commercial Operations	17	20	23	27	31
Total Peak Hour Passengers	**2,084**	**2,712**	**3,021**	**3,343**	**3,743**

Source: *Mead & Hunt, 2023.*

Note: [1] *PAL = Planning Activity Levels.*

The design day flight schedules defined the future peaking characteristics for the various PALs.

Figure 3-1, **Figure 3-2**, and **Figure 3-3** show how the daily activity evolves over time. Terminal programming is fundamentally determined based on the Airport's peaking characteristics throughout the day. It is important to note that, although the peak hour grows over this planning period, it does not grow proportionally with overall enplanements. This can be explained by the assumption that design day will grow with future flights being scheduled in current off-peak times due to the added frequency to already served markets rather than adding a flight to the same destination during the peak time. For example, if there is an existing flight during the peak hour to Chicago O'Hare International Airport (ORD), that airline will not add another flight to the same destination at the same time. Instead, they would either up-gauge the aircraft or a add flight earlier or later in the day to ORD that aligned with that airline's hub departure bank out of ORD.

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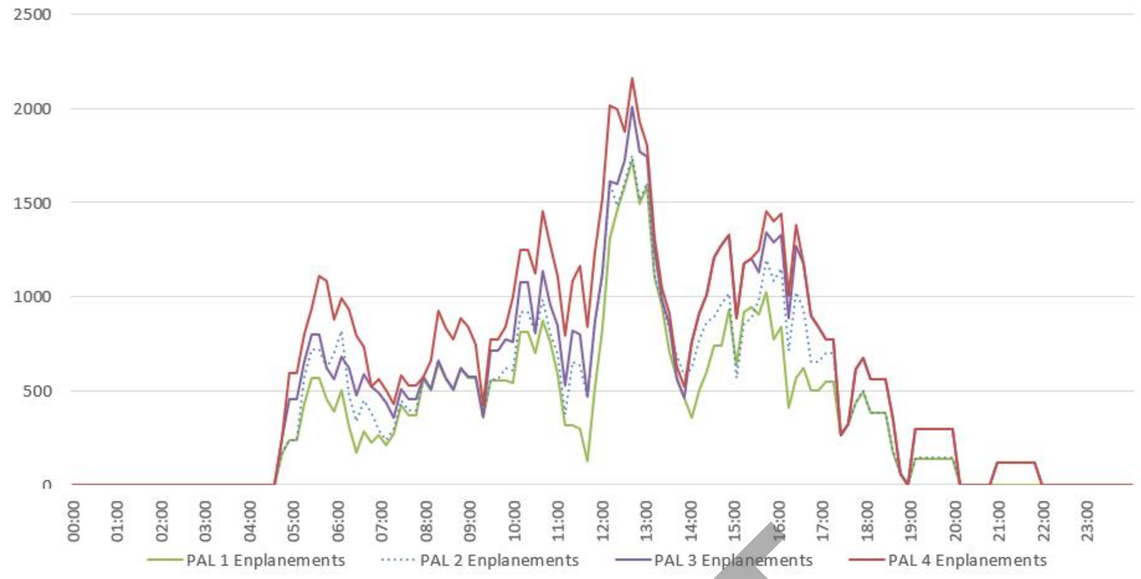
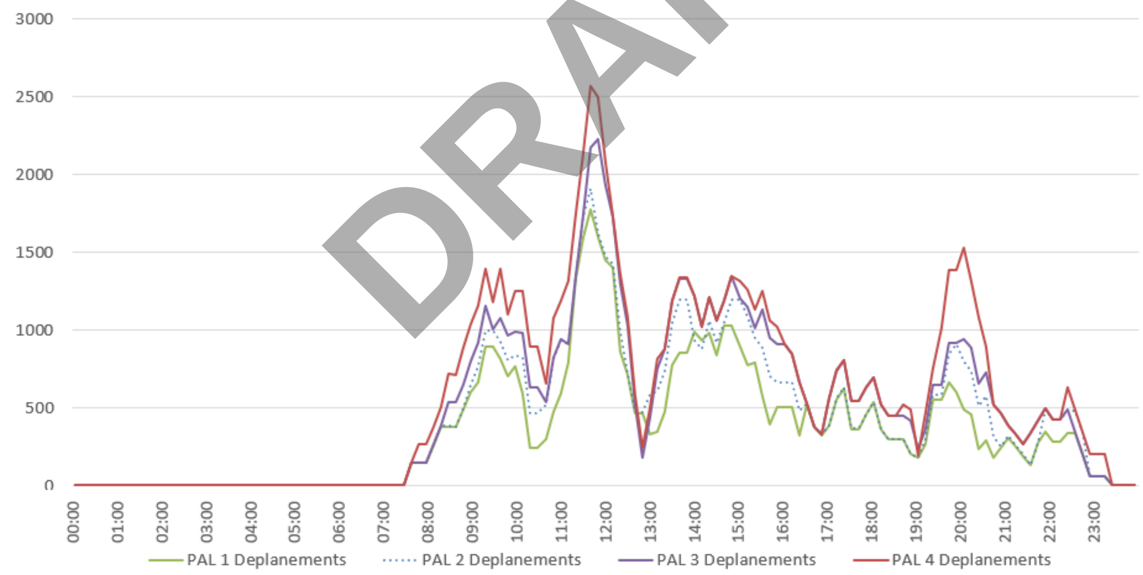
Figure 3-1: PSP Peak Hour Enplanements



Source: *Mead & Hunt, 2023.*

Figure 3-2: PSP Peak Hour Deplanements



Source: *Mead & Hunt, 2023.*

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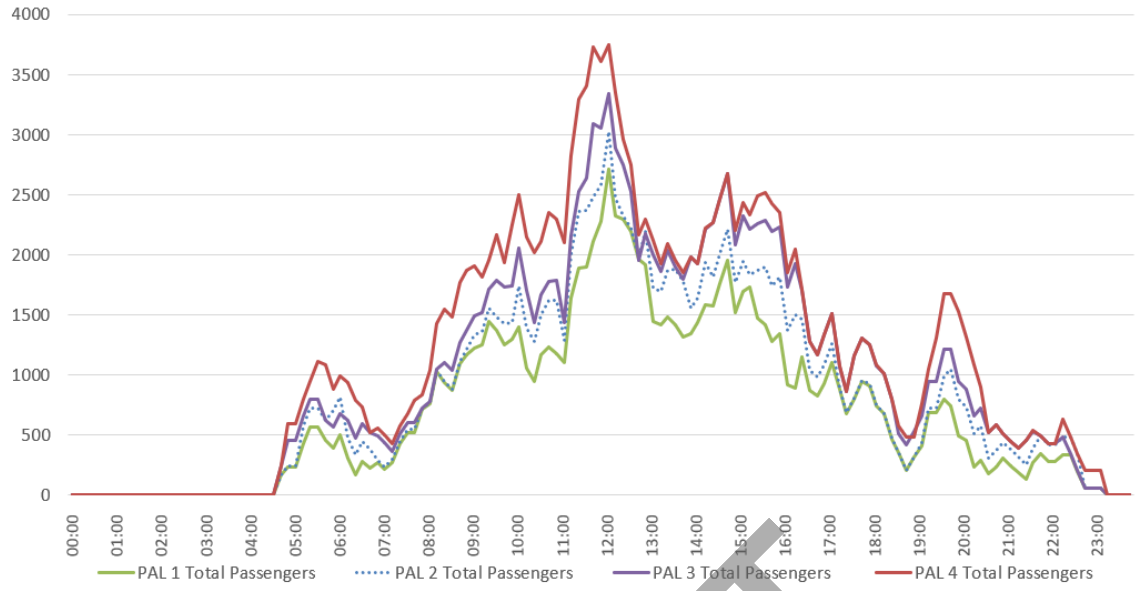
Figure 3-3: PSP Peak Hour Total Passengers



Source: *Mead & Hunt, 2023.*

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Methodologies

Facility requirements for PSP were calculated by using assumptions about optimum space and waiting times determined by International Air Transport Association (IATA), passenger attributes, and show-up profiles. Once the requirement of a certain terminal component was determined such as the number of check-in counters, kiosks, bag-drop stations, checkpoint lanes, explosive detection scanners, baggage claim carousels, departure lounges, etc., a template of that space was developed to determine the proposed space required for the various PALs.

Terminal Planning Level-of-Service

The IATA has developed and refined a comprehensive set of standards for evaluating and planning passenger terminals utilizing the level-of-service (LOS) concept as **Table 3-2** shows. The LOS framework published in the IATA ADRM (12th Edition) centers around three categories of level-of-design for passenger terminal facilities:

1. **Over-Design:** Excessive space and over provision of resources.
2. **Optimum:** Sufficient space to accommodate the necessary functions in a comfortable environment, and acceptable processing and waiting times.
3. **Sub-Optimum:** Crowded and uncomfortable, and unacceptable processing and waiting times.

Table 3-2: Terminal Planning Level of Service

LOS Parameters			Space		
			Over-Design	Optimum	Sub-Optimum (consider improvements)
			Excessive or empty areas	Sufficient space to accommodate necessary functions in a comfortable environment	Crowded and uncomfortable
Queuing Time	Over-Design	Overprovision of Resources	OVER-DESIGN	OPTIMUM	SUB-OPTIMUM (consider improvements)
	Optimum	Acceptable queuing times	OPTIMUM	OPTIMUM	SUB-OPTIMUM (consider improvements)
	Sub-Optimum	Unacceptable queuing times	SUB-OPTIMUM (consider improvements)	SUB-OPTIMUM (consider improvements)	UNDER-PROVIDED (reconfigure)

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Source: *Mead & Hunt, 2023.*

These three categories are defined by variables of queuing time and space provided. To provide a sufficient passenger terminal facility, passengers are expected to not be waiting in a queue for a certain amount of time and have sufficient space throughout the experience in the terminal. **Table 3-3** summarizes the Optimum LOS space and waiting time standards for the core passenger processing areas. The recommended improvements to functional areas also consider minimizing total passenger processing time in order to maximize convenience to the extent practical.

Table 3-3: LOS Parameters

PASSENGER TERMINAL PROCESSOR	NOTES	SPACE GUIDELINES				MAXIMUM WAITING TIME GUIDELINES FOR PROCESSING FACILITIES								OTHER GUIDELINES AND REMARKS				
		(ft^2/passenger unless otherwise noted) IATA				(minutes) Economy Class (min)				(minutes) Business Class/First Class (min)								
ADRM 9th Edition		A B	C	D	E	A B	C	D	E	A B	C	D	E	A B	C	D	E	
ADRM 11th Edition		Over-Design	Optimum	Sub-Optimum	Under-Provided	Over-Design	Optimum	Sub-Optimum	Under-Provided	Over- Design	Optimum	Sub-Optimum	Under-Provided	Over- Design	Optimum	Sub- Optimum	Under-Provided	
Public Departure Hall		>24.8	21.5–24.8		<21.5	N/A	N/A		N/A	N/A	N/A		N/A	15%–20% *				Optimum proportion of seated occupants
Check-in																		
Self-Service Kiosk	boarding pass/bag tagging	>19.4	14.0–19.4		<14.0	<0	0–2		>2	<0	0–2		>2					
Bag Drop Desk	queue width 4.5–5.0 ft	>19.4	14.0–19.4		<14.0	<0	0–5		>5	<0	0–3		>3					
Check-in Desk	queue width 4.5–5.0 ft	>19.4	14.0–19.4		<14.0	<10	10–20		>20	Business	3–5		>5					
	queue width 4.5–5.0 ft	>19.4	14.0–19.4		<14.0	<10	10–20		>20	First	1–3		>3					
Security Checkpoint	queue width 4 ft	>12.9	10.8–12.9		<10.8	<5	5–10		>10	Fast Track	1–3		>3					
Gate Holdrooms / Departure Lounges ***							N/A				N/A							
Seated		>23.7	19.4–23.7		<19.4	N/A	N/A		N/A	N/A	N/A		N/A	50%–70% *				Optimum proportion of seated occupants
Standing		>16.1	12.9–16.1		<12.9	N/A	N/A		N/A	N/A	N/A		N/A					
Baggage Claim Area																		
Narrowbody		>18.3	16.2–18.3		<16.2	<0	0–15		>15	<0	0–15		>15	The first waiting time value relates to "first passengers to first bag." The second waiting time value relates to "last bag on belt" (counting from the first bag delivery). **				
Widebody		>18.3	16.2–18.3		<16.2	<0	0–25		>25									
Public Arrival Hall		**>24.8**	**21.5–24.8**		**<21.5**	**N/A**	**N/A**		**N/A**	**N/A1**	**N/A**		**N/A**	**15%–20% ***				

Source: *Mead & Hunt, 2023.*

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Passenger Attributes

In analyzing passenger activity, the percentage of passengers who check baggage or otherwise use units in the airline check-in area and the time passengers show up at the terminal were considered. The percentage of passengers with checked bags applies to both departing and arriving (destination) passengers while show-up time is an attribute considered for departing (originating enplaned) passengers.

Check-In Type

The check-in type differentiates passenger processes based on the individual characteristics described below. The arrangement and sequence of the process reflects airline-specific check-in protocols and the deployment of emerging technologies in the check-in area throughout the planning horizon. Passenger check-in attributes at PSP are segmented into four categories:

1. **Mobile:** Passengers not having checked bags and obtain their ticket via their mobile device. These passengers by-pass the check-in area.
2. **Self-Service Kiosks:** Passengers using these self-service kiosks can be either passengers not checking bags who obtain their ticket at the Airport or passengers checking-in for the flight and checking a bag. Once the tag is placed on the bag, passengers proceed to a bag drop-off area.
3. **Bag-Drop Position:** These positions are staffed by airline personnel who stand behind the counter and receive the bag from passengers who have placed the tag on their bag from a self-service kiosk.
4. **Full-Service Position:** These positions are also staffed by airline employees and provide a full customer experience to mostly passengers checking baggage or passengers not checking bags who need assistance.

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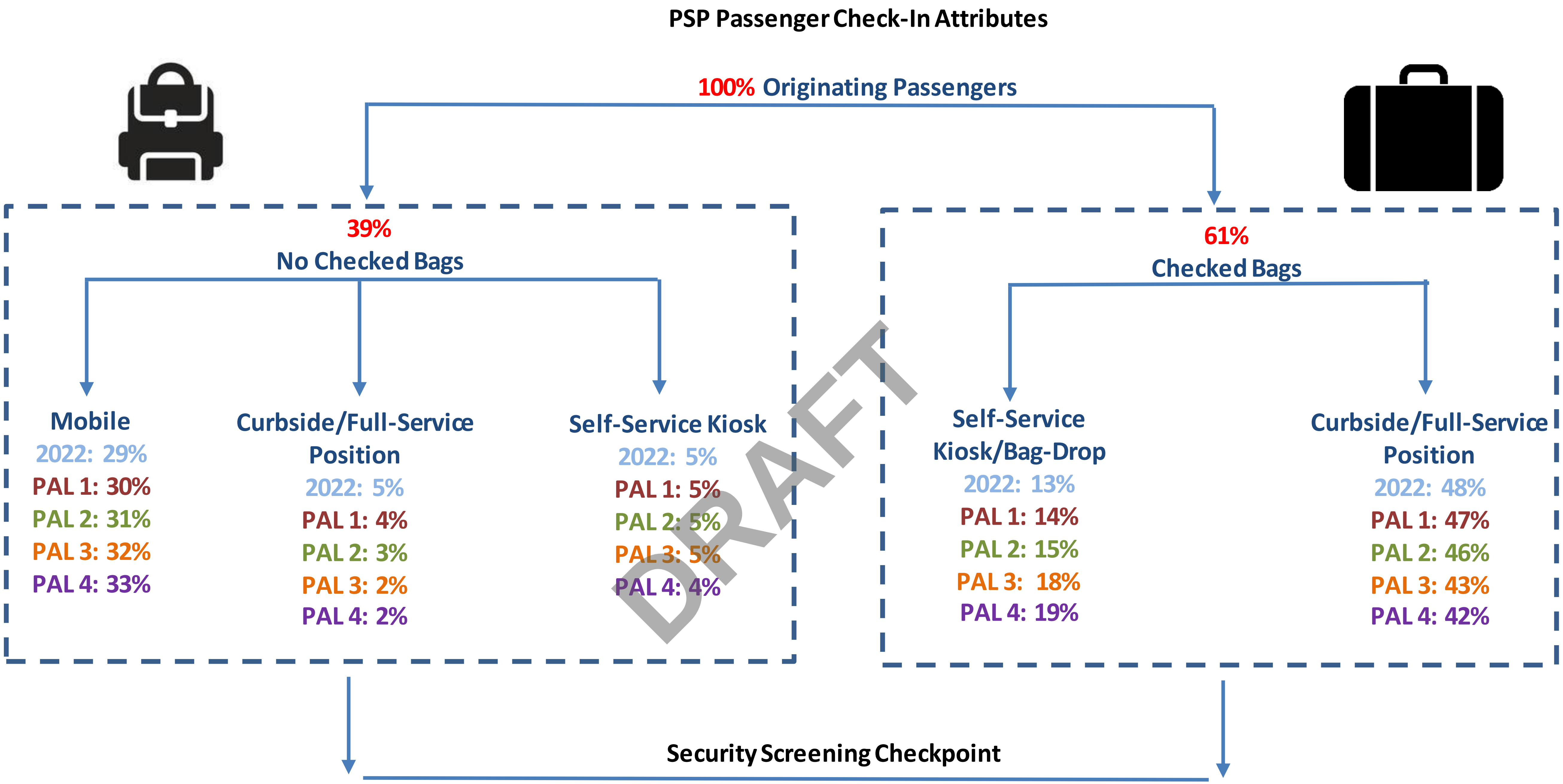
Figure 3-4 illustrates the assumptions of passengers using the various check-in facilities throughout the planning horizon. As shown, the percentage of passengers using mobile devices and kiosks increases while the use of full-service positions is anticipated to decrease.

Figure 3-4: PSP Passenger Check-In Attributes


PSP Passenger Check-In Attributes
100% Originating Passengers
39%
No Checked Bags
Mobile
2022: 29%
PAL 1: 30%
PAL 2: 31%
PAL 3: 32%
PAL 4: 33%
Curbside/Full-Service Position
2022: 5%
PAL 1: 4%
PAL 2: 3%
PAL 3: 2%
PAL 4: 2%
Self-Service Kiosk
2022: 5%
PAL 1: 5%
PAL 2: 5%
PAL 3: 5%
PAL 4: 4%
61%
Checked Bags
Self-Service Kiosk/Bag-Drop
2022: 13%
PAL 1: 14%
PAL 2: 15%
PAL 3: 18%
PAL 4: 19%
Curbside/Full-Service Position
2022: 48%
PAL 1: 47%
PAL 2: 46%
PAL 3: 43%
PAL 4: 42%
Security Screening Checkpoint

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Source: Mead & Hunt, 2023.

Show-Up (Airport Arrival)

A show-up profile is a distribution curve that represents the amount of time passengers arrive at the terminal before their scheduled flight departure. Several factors affect arrival profiles, including the mode of travel to the Airport, class of service, whether the passenger is checking baggage, and the time of day. This results in a metering of passengers that directly influences passenger demand throughout the passenger processing system. About 50 percent of peak hour enplanements arrive within a 30-minute period, which was found in the show-up profile study.

Aircraft Gate Parking Positions

The number of aircraft gates are the most impactful variable that drive future terminal space. A total of 21 parking positions are currently available at PSP. The Bono Concourse has eight gates with an extra parking position at Gate 1, while the Regional Concourse has 10 gates with extra parking positions at Gates 12 and 20. Although there are 21 parking positions, this analysis used 18 as the number of existing gates since only 18 gates can be processed for departure at any time. The development of projected aircraft parking requirements involved an Aircraft on Ground (AOG) analysis of the DDFS developed for each PAL. An AOG analysis uses the DDFS to develop a running count of the number of aircraft on the ground throughout the design day by aircraft type and whether they are actively loading or unloading passengers.

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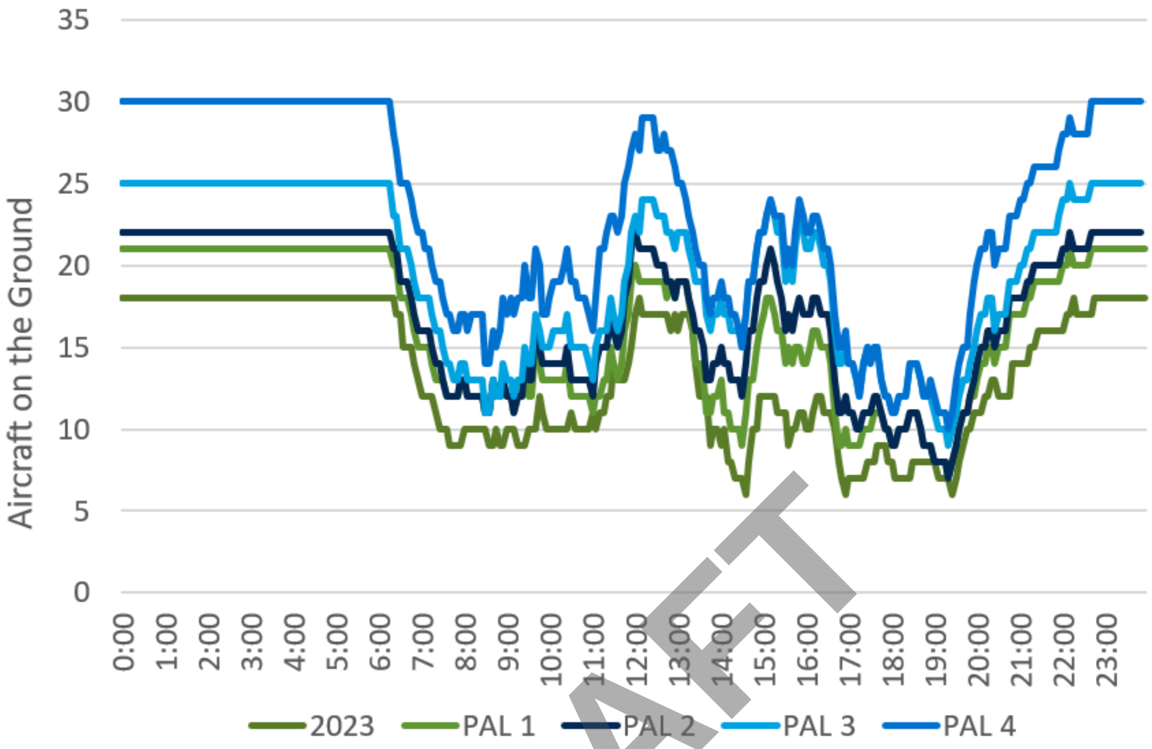
During the AOG analysis, aircraft with long ground times were assumed to be towed off of the gate to a remote parking position. Towing aircraft off of the gate allows other aircraft to use a position for passenger loading/unloading, which maximizes the utilization of the gates and reduces the need for additional gates. Aircraft were only eligible to be towed if they were at the gate longer than 120 minutes and if the gate was needed by another aircraft. An aircraft cannot be towed during the first 30 minutes after arrival and must be towed back to a gate 45 minutes prior to its departure. In **Figure 3-5** PAL 4 estimates that 30 aircraft remain on the ground overnight and that about 29 aircraft, which require a gate, are on the ground during the day.

Table 3-4 summarizes the gate requirements for PAL 1 through PAL 4. For this gate analysis, a two-gate contingency was added in the event of maintenance or irregular operations. Rather than proposing an exact number of gates, a range of gates are proposed for each PAL. Through PAL 4, PSP should anticipate 30-32 gates to be able to accommodate its on-the-ground activity.

Figure 3-5: Aircraft On-the-Ground Analysis



Source: Mead & Hunt, 2023.

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Table 3-4: Summary of PSP Gate Requirements

	Existing	PAL[1] 1	PAL 2	PAL 3	PAL 4
Million Annual Passengers	3.0 MAP[2]	4.0 MAP	4.8 MAP	5.6 MAP	6.5 MAP
# or range of Gates	18	21-23	22-24	25-28	30-32
Year according to high-growth forecasts	-	2026-2027	2032-2033	2037-2038	2042-2043
Year according to baseline forecasts	-	2030-2032	2035-2036	2041-2042	Beyond 20 Yrs.

Source: *Mead & Hunt, 2023.*

Notes: *[1] PAL = Planning Activity Levels.*
[2] MAP = Million Annual Passengers.

Airline Check-In

PSP provides a variety of check-in options including full-service check-in counters, bag-drop stations, self-service kiosks, and curbside check-in. Most air carriers are now replacing traditional check-in counters with self-service kiosks due to technological advancements that effectively decrease processing time and staff requirements. For instance, Alaska Airlines was the first airline at PSP to recently deploy kiosks that allow passengers checking bags to check-in from their mobile device and print the baggage tag at the Airport by scanning their boarding ticket, decreasing the amount of processing time for passengers in the ticketing area. These types of changes focusing on technological advancements are assumed to become more popular throughout the planning horizon.

The configuration of airline check-in facilities in airport terminals depends on airline preference as some airlines have adopted emerging check-in technologies and layouts quicker than other airlines. The various configurations may include traditional linear agent counters, island counters, or a mix of remote self-service kiosks and full-service positions, similar to what PSP currently has.

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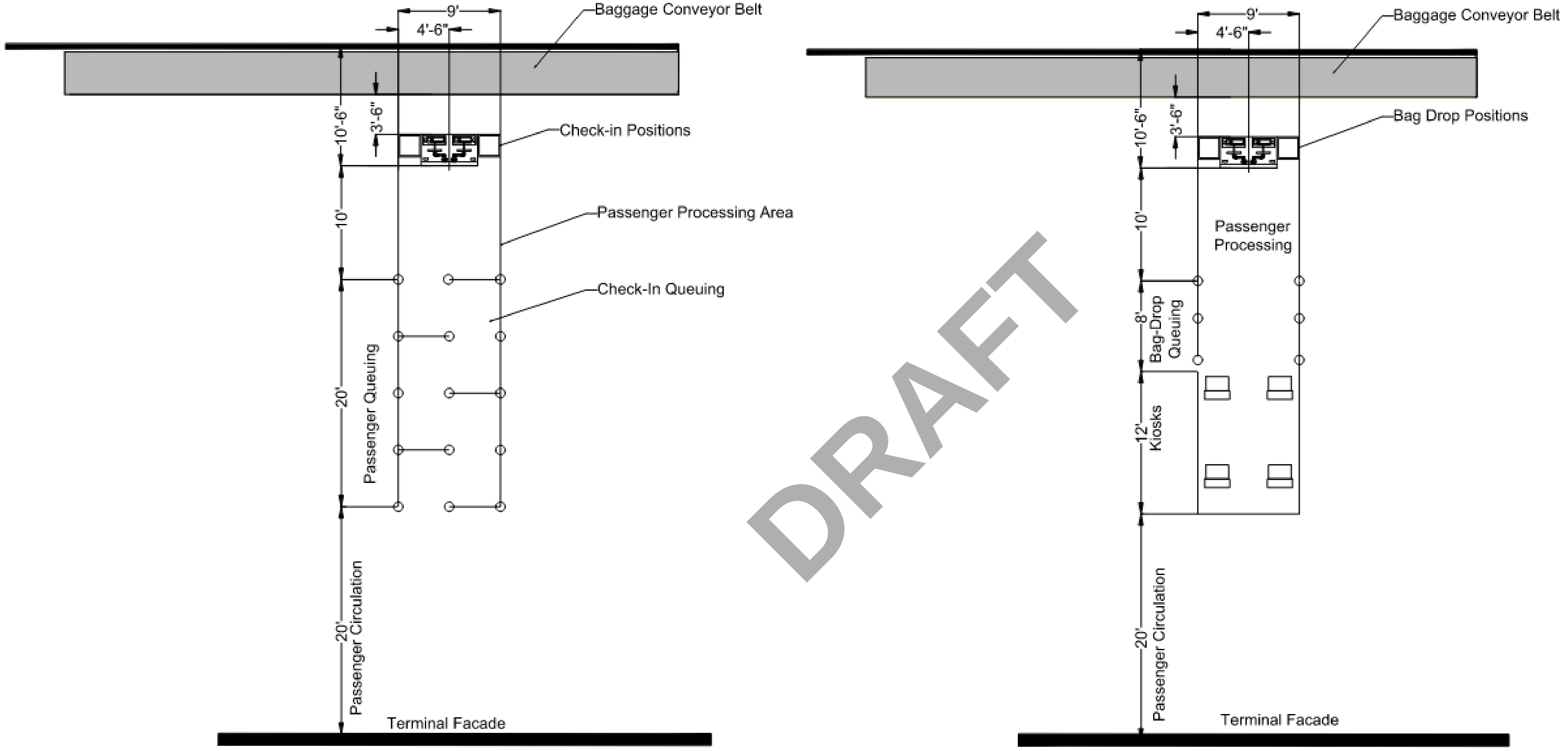
Figure 3-6 illustrates a standard check-in configuration currently at PSP. This template reflects the recent terminal improvement project to the Airport’s ticketing area in 2020, when the Airport pushed the wall between the ticketing area and airline ticket office easterly 19 feet. The following elements are included in this airline check-in area configuration:

- **Check-in Positions:** The positions staffed by airline employees to check passengers in using the full-service counters or self-tagging their bags at the kiosks and dropping bags off. Each check-in position is 4.5 feet wide and includes the counter and baggage scale. The depth of each check-in position varies by airport but should be at least 10.5 feet from the face of the counter to the back wall. This depth allows sufficient space for the counter, airline employees processing passengers, and baggage system infrastructure.
- **Passenger Processing Area:** The area in front of the counters where passengers stand with their baggage while being processed by the airline employees. The passenger processing area has a depth of at least 10 feet between the front of the counter and queuing space to accommodate the passengers getting their bag(s) processed and passengers crossing the check-in area after being processed.
- **Check-in Queue:** The space between the passenger processing area and circulation corridor where passengers wait with their baggage. The width of each aisle of queuing space is between 3.5 feet and 5 feet to allow enough space for passengers requiring additional assistance to maneuver safely. Depending on services offered by the airline, different queueing lines may be available for passengers using first-class, business-class, or premier access services.
- **Circulation Corridor:** The circulation corridor is the space passengers use to access the check-in area from the front curb and is typically located between the front of the terminal and the check-in queuing area. The width of this space is typically at least 20 feet to comply with International Building Code and keep it free of any fixed obstructions to accommodate the cross-circulation for passengers and non-passengers.

Figure 3-6: Typical Two-Counter Check-In Configuration


9'
4'-6"
Baggage Conveyor Belt
10'-6"
3'-6"
Check-in Positions
10'
Passenger Processing Area
Check-In Queuing
20'
Passenger Queuing
20'
Passenger Circulation
Terminal Facade
9'
4'-6"
Baggage Conveyor Belt
Bag Drop Positions
10'-6"
3'-6"
10'
Passenger Processing
8'
Bag-Drop Queuing
12'
Kiosks
20'
Passenger Circulation
Terminal Facade

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Queuing Area per Two Agent Counter: 270 SF
Area per Position: 48 SF

Source: ACRP 25 Airport Passenger Terminal Planning and Design Volume 1
Prepared by: Mead & Hunt 2023

Queuing Area per Bag Drop Station: 81 SF
Area per Position: 48 SF

Source: ACRP 25 Airport Passenger Terminal Planning and Design Volume 1
Prepared by: Mead & Hunt 2023

The airline check-in lobby template shown in **Figure 3-6** prescribes a planning factor of roughly 48 square feet (SF) per full-service position and 270 SF of queuing pace per two agent counters**.**

Growth in check-in area requirements was based on the following requirements for the various PALs in addition to the passenger check-in type attributes previously identified:

PAL 1

- New airline enters requiring four Full-Service Positions (FSPs) and two bag drop stations.
- Existing airline requires two additional FSP and two additional bag drop stations.

PAL 2

- Existing airline requires two additional FSP and two additional bag drop stations as modern technologies emerge.

PAL 3

- Existing airlines requiring four additional FSP and four bag drop stations.

PAL 4

- New airline enters requiring four additional FSP and four bag drop stations.

Based on these assumptions, **Table 3-5** identifies the space requirements in the check-in area throughout the planning horizon.

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Table 3-5: Check-In Area Requirements

	Existing	2022	PAL[1] 1	PAL 2	PAL 3	PAL 4
Full-Service Positions	51	48	55	57	61	65
Full-Service Position Area	3,300	2,400	2,700	2,800	3,000	3,200
Full-Service Queue Area	6,000	6,500	7,500	7,700	8,300	8,800
Kiosks	24	12	13	14	19	20
Kiosk Position Area	-	500	600	600	800	800
Kiosk Queue Area	-	1,000	1,100	1,200	1,600	1,600
Bag Drop	10	10	14	16	20	24
Bag Drop Area	-	500	700	800	1,000	1,200
Bag Drop Queue Area	-	900	1,200	1,300	1,700	2,000
Ticketing Area Circulation	8,500	7,700	8,800	9,120	9,760	10,400
Total Ticketing Area	**17,800**	**19,500**	**22,600**	**23,520**	**26,160**	**28,000**
Curbside Counters	7	7	7	7	7	7
Curbside Counter Area	-	700	700	700	700	700

Source: *Mead & Hunt, 2023.*
Note: *[1] PAL = Planning Activity Level.*

Baggage Screening

All checked baggage at airports is subject to screening for explosives. The requirements for outbound baggage screening facilities are based on the number of checked bags per passenger during the peak hour as well as the processing rate of the screening equipment.

There are generally two broad categories of Checked Baggage Inspection Systems at airports, which use a combination of explosive detection systems (EDS) and explosive trace detector (ETD) units: in-line and stand-alone. Within these categories are alternatives that range from highly integrated, highly automated, and low labor-intensive systems to low-automated and high labor-intensive systems.

PSP currently has five CT-80DR+L scanners and anticipates a sixth in the near future. The five scanners are integrated into a conveyor system from the check-in area and curbside counters, but have the processing rate of a stand-alone machine as personnel are required to manually place bags into and retrieve bags out of the scanner. The existing baggage processing capacity is approximately 820-920 bags per hour. PSP is in the process of redesigning their baggage screening system to convert everything into a fully automated in-line system, which will significantly impact the baggage throughput. For example, one stand-alone machine can process 160-200 bags per hour where one in-line machine can process 530-710 bags per hour.

Facility requirements for baggage screening equipment are a function of the percentage of passengers checking bags at the Airport, the types of screening machines, and the amount of additional space needed for conveyors.

Table 3-6 displays the results of the future space requirements for checked baggage screening.

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Table 3-6: Baggage Screening Requirements

	Existing	PAL[1] 1	PAL 2	PAL 3	PAL 4
Total # of Bags to Process in Peak Hour	781	844	853	970	1,039
# of EDS[2] Devices (532 bags processed per machine per hour)	5	4	4	4	4
# of Level 2 OSR[3] Stations Required	2	2	2	3	3
# of Level 3 ETD[4] Units Required	3	3	3	4	4
Total Outbound Baggage Make-Up Area	**26,300**	**29,250**	**29,250**	**29,250**	**39,000**

Source: *Mead & Hunt, 2023.*

Notes: *[1] PAL = Planning Activity Level.*

[2] EDS = Explosive Detection Systems.

[3] OSR = On-Screen Resolution.

[4] ETD = Explosive Trace Detection.

Outbound Baggage Makeup

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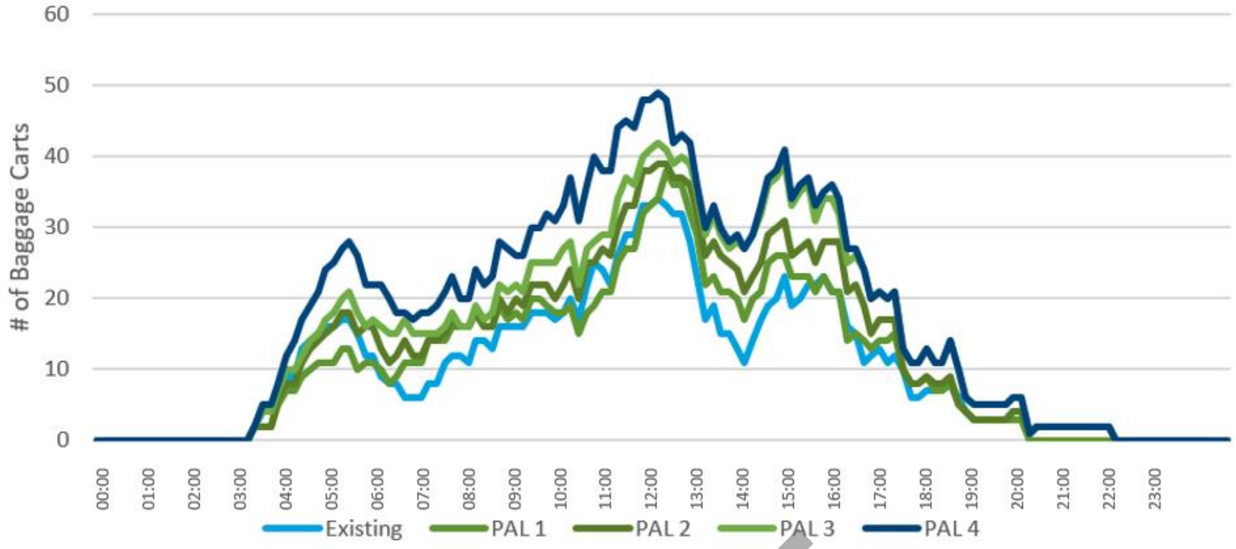
Outbound baggage makeup consists of the areas designated for outbound bags to be sorted, handled, and placed on baggage carts for the departing flight following the baggage screen process. This area also consists of ground service equipment circulation. As mentioned in *Chapter 1*, after screening the outbound baggage, operation consists of bags being transported to three outbound baggage carousels located outside and covered by aluminum roofs. Up to 16 baggage carts can park parallel to each carousel allowing for approximately 48 carts to stage simultaneously around the carousel. Outbound baggage makeup requirements are a function of the number of baggage carts needed in a two-hour departure window. **Figure 3-7** shows the demand of baggage carts needed throughout the existing and future design days within a three-hour window before the departure. These profiles were developed using the assumptions shown in **Table 3-7,** which depicts the number of carts staged ahead of a flight's scheduled departure time.

Figure 3-8 shows a general template for an outbound baggage makeup area configuration. The unit length is based on a 160-foot linear presentation frontage sloped plate device able to accommodate baggage from a typical narrowbody aircraft flight. The makeup unit area includes the carousel equipment, work area, cart staging clearances, and other critical dimensional clearances.

Figure 3-7: PSP Daily Baggage Cart Demand



Source: *Mead & Hunt, 2023.*

Table 3-7: Outbound Baggage Makeup Cart Staging Profile

Minutes Prior to Departure	Percentage of Flights Carts Staged
180	0%
170	0%
160	0%
150	50%
140	50%
130	50%
120	100%
110	100%
100	100%
90	100%
80	100%
70	100%
60	100%
50	100%
40	100%
30	100%
20	0%
10	0%

Source: *Mead & Hunt, 2023.*

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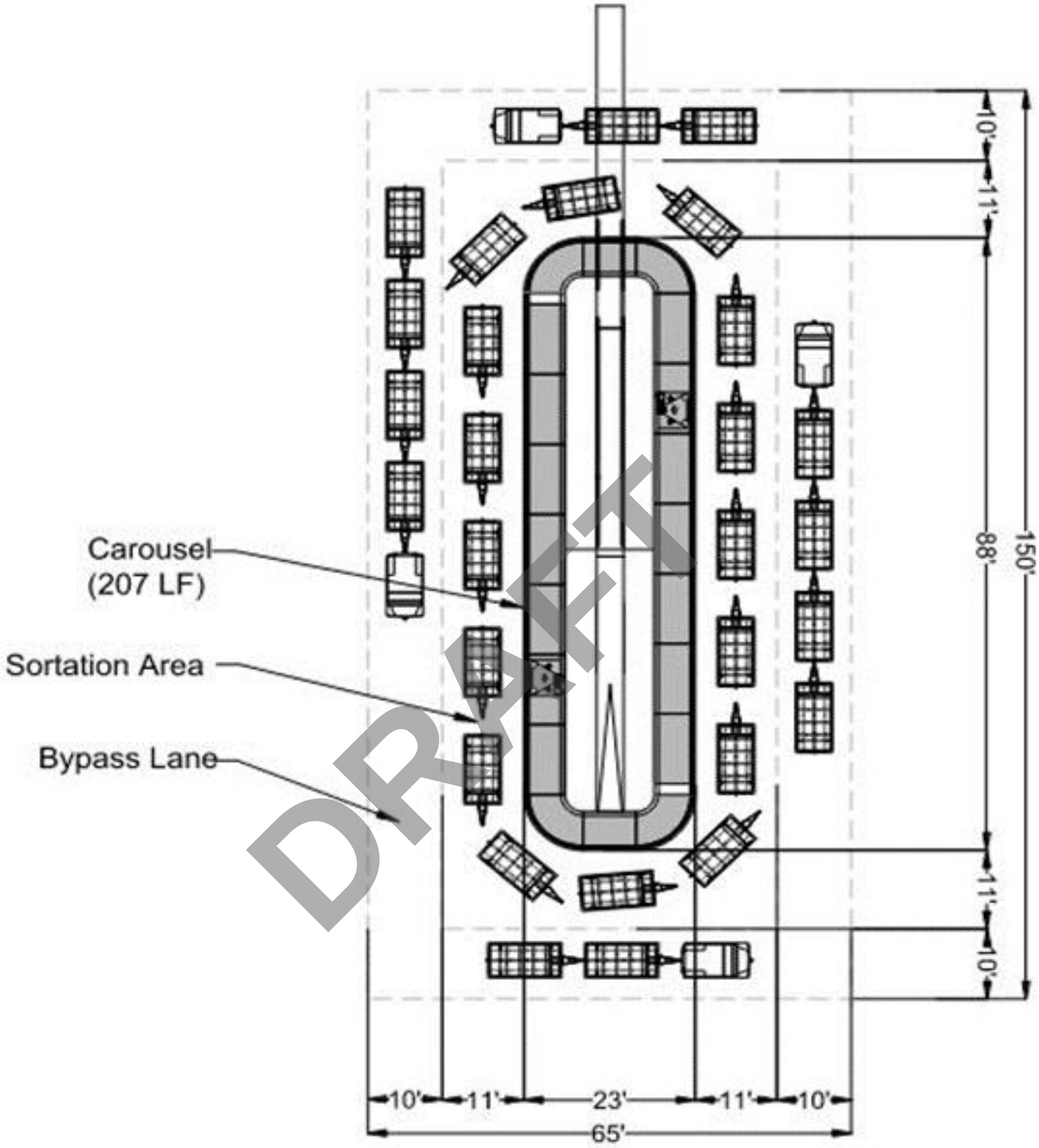
Figure 3-8: Outbound Baggage Make-Up Area Requirements


Carousel
(207 LF)
Sortation Area
Bypass Lane
10'
11'
88'
11'
10'
150'
10'
11'
23'
11'
10'
65'

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Specifications per Device:
9,750 SF
207-foot linear presentation frontage
16 carts
609 sf/cart

Prepared by: Mead & Hunt 2023

Outbound baggage make-up requirements are presented in **Table 3-8**. Based on the above assumptions, the number of staged carts will not exceed 49. Therefore 39,000 SF are ultimately required for outbound baggage facilities.

Table 3-8: Outbound Babbage Makeup Area Requirements

	Existing	2022	PAL[1] 1	PAL 2	PAL 3	PAL 4
# of Carts for 2.5 Hour Peak	34	34	38	39	42	49
# of Outbound Baggage Carousels	3	3	3	3	3	4
Total Outbound Baggage Make-Up Area	**26,300**	**29,250**	**29,250**	**29,250**	**29,250**	**39,000**

Source: *Mead & Hunt, 2023.*

Note: [1]*PAL = Planning Activity Level.*

Security Screening Checkpoint

PSP currently has a six-lane configuration with a private screening room. Programming space requirements for the security screening checkpoint include evaluating existing and future peak hour demand, throughput rates of passengers using standard lanes and Pre✓ lanes, achieving optimal IATA wait times and space per passenger requirements, and space requirements for screening equipment.

Figure 3-9 illustrates a one-lane configuration referenced in the TSA Checkpoint Requirements and Planning Guide. Based on this layout and defined in the document, a standard AT2 Rapiscan configuration accounts for 2,550 SF, which includes a travel document check area, scanning process area, and an area to recompose. Additionally, 600 SF of queuing space is provided as recommended.

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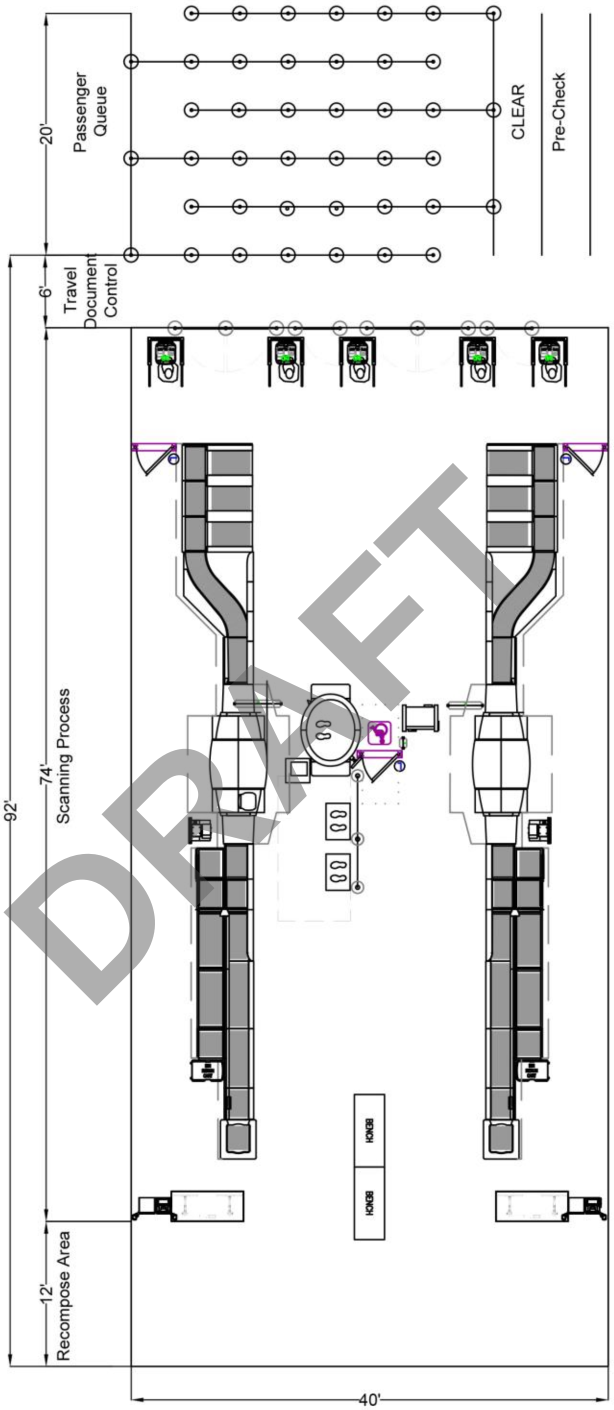
Figure 3-9: Security Screening Checkpoint Two-Lane Configuration


20'
Passenger Queue
CLEAR
Pre-Check
6'
Travel Document Control
92'
74'
Scanning Process
12'
Recompose Area
BENCH
BENCH
40'
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Area for One Lane: 1,900 SF
Queuing Area for One Lane: 600 SF

Source: TSA Checkpoint Requirements and Planning Guide, 2023, Two-Lane CT CPSS Full, Analogic Configuration
Prepared by: Mead & Hunt 2023

Table 3-9 shows the security screening checkpoints requirements.

Table 3-9: Security Screening Checkpoint Requirements

	Existing	2022	PAL[1] 1	PAL 2	PAL 3	PAL 4
Peak 30-Minute Passengers	794	794	864	874	1004	1081
% of Passengers using Standard Lanes	55%					
% of Passengers using Pre✓	45%					
# of Standard Lanes	5	4	4	4	5	6
# of Pre✓ Lanes	1	3	3	3	3	4
Total SSCP[2] Area	**13,354**	**18,900**	**18,900**	**18,900**	**21,600**	**27,000**

Source: *Mead & Hunt, 2023.*

Notes: *[1] PAL = Planning Activity Level.*

[2] SSCP = Security Screening Check Point.

Departure Lounges

The basis for calculations of departure lounge requirements is the number of gates, aircraft seating capacity per gate, average aircraft load factor, the physical layout of the departure lounge, and the number of seated vs. standing passengers. Facility requirements for departure lounges at PSP were determined based on regional jet (RJ), narrowbody (NB), and widebody (WB) gates. The assumptions and requirements for departure lounges are identified in **Table 3-10** and **Table 3-11,** respectively.

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Table 3-10: Departure Lounge Programming Requirements

	RJ[1]	NB[2]	WB[3]
Aircraft Seats	90	190	216
Load Factor (%)	80%	80%	80%
Seated Passenger Population (%)	70%	70%	70%
Area per Seated Passenger (SF[4])	23.7	23.7	23.7
Standing Passenger Population (%)	20%	20%	20%
Area per Standing Passenger (SF)	16.1	16.1	16.1
Standing Passenger in Queue (%)	10%	10%	10%
Area per Standing Passenger in Queue (SF)	12.9	12.9	12.9
Area per Podium (100 SF / 1 Podium)	100	100	100
Boarding Pass Readers (SF)	40	40	40
Boarding/Egress Aisle (SF)	210	210	210
Area Per Departure Lounge	**1,870**	**3,560**	**4,000**

Source: *Mead & Hunt, 2023.*

Notes: *[1] RJ = Regional Jet.*
[2] NB = Narrowbody.
[3] WB = Widebody.
[4] SF = Square Footage.

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Table 3-11: Summary of Departure Lounge Requirements

	Existing	2022	PAL[1] 1	PAL 2	PAL 3	PAL 4
# of RJ[2] Gates	1	0	0	0	0	0
# of NB[3] Gates	17	20	22	23	26	30
# of WB[4] Gates	0	0	1	1	1	2
Total Gates	**18**	**20**	**23**	**24**	**27**	**32**
Total Area for Departure Lounge	**29,242**	**71,200**	**82,320**	**85,880**	**96,560**	**114,800**

Source: *Mead & Hunt, 2023.*

Notes: *[1] PAL = Planning Activity Level.*
[2] RJ = Regional Jet.
[3] NB = Narrowbody.
[4] WB = Widebody.

Baggage Claim and Inbound Baggage Handling

The baggage claim area at PSP currently consists of three U-Shaped, flat-plated carousels that are fed inbound baggage through an inbound baggage lane on the other side of the secure/non-secure wall. Additionally, the rental car counters and queuing are located adjacent to the baggage claim area and often become congested when passengers queued for rental cars will spill over into the baggage claim area and intersect passenger circulation. PSP is currently undergoing a design to add a fourth carousel and convert all carousels into slope-faced carousels. Due to the transition into slope-faced carousels, the space template used for this study is shown in **Figure 3-10.** The space template includes a 160-foot carousel with a 20-foot buffer for passenger dwelling, which is sufficient for holding two narrowbody arrivals simultaneously.

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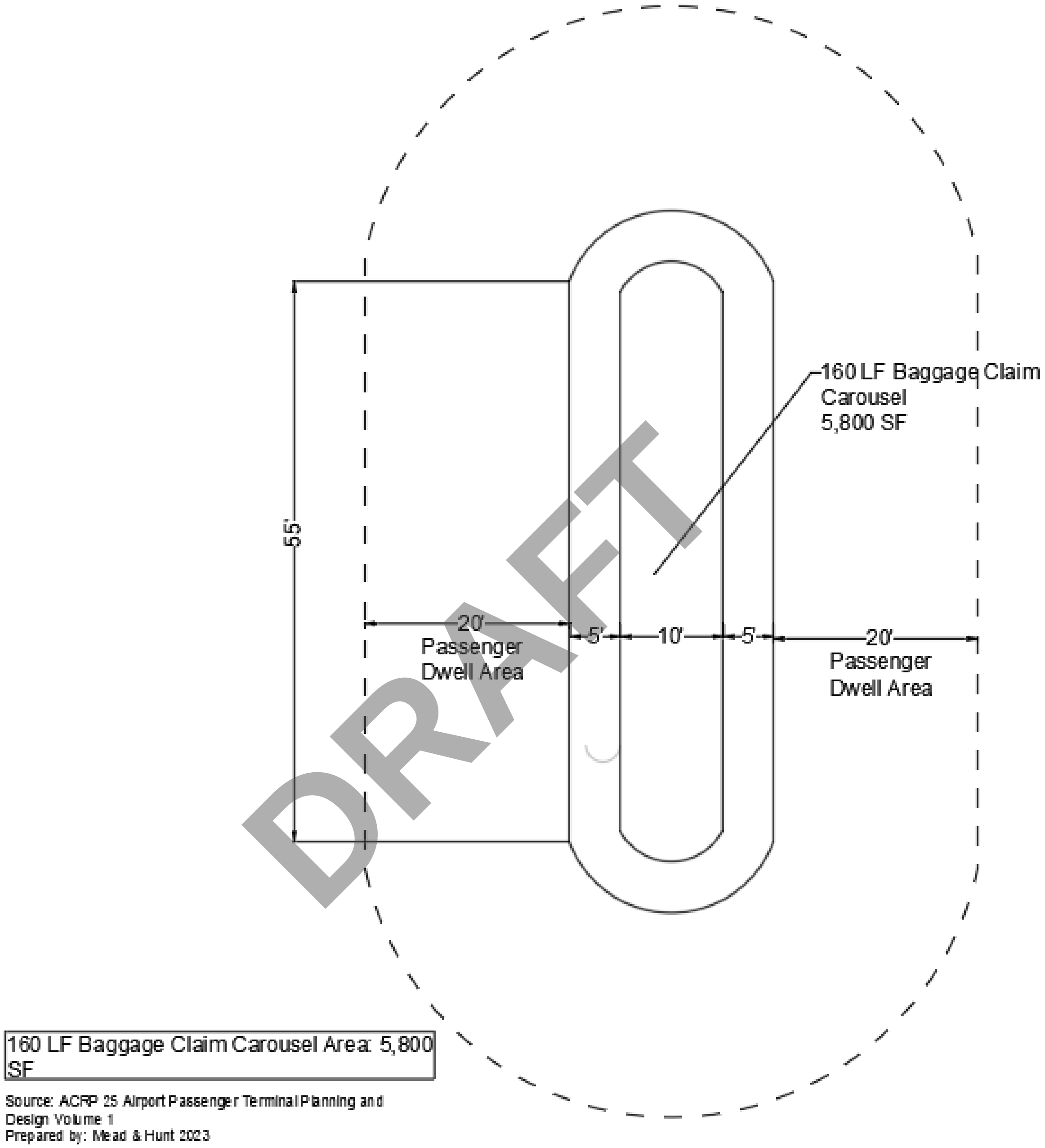
Figure 3-10: Baggage Claim and Inbound Baggage Makeup Area for 100 LF Carousel


160 LF Baggage Claim Carousel 5,800 SF
55'
20' Passenger Dwell Area
5'
10'
5'
20' Passenger Dwell Area
160 LF Baggage Claim Carousel Area: 5,800 SF
Source: ACRP 25 Airport Passenger Terminal Planning and Design Volume 1
Prepared by: Mead & Hunt 2023

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Source: *Mead & Hunt, 2023.*

The number of carousels and space needed throughout the planning horizon was determined based on the number of arrivals in the peak 20 minutes of the future design day schedules.

Table 3-12 shows the summary of baggage claim area requirements. This space has additional space for baggage service offices, which includes a 150-SF office for every airline having five or more daily departures.

Table 3-12: Summary of Baggage Claim Area Requirements

	Existing	2022	PAL[1] 1	PAL 2	PAL 3	PAL 4
Peak 20-Minute # of Arrivals	7	7	9	9	9	10
Peak 20-Minute # of Bags	445	445	595	595	595	687
Total People at Claim	290	290	387	387	387	447
Claim Frontage per Person	435	435	581	581	581	671
# of Carousels	3	3	4	4	4	5
Total Baggage Claim Area	**11,390**	**18,300**	**24,100**	**24,100**	**24,200**	**30,260**

Source: *Mead & Hunt, 2023.*

Note: *[1] PAL = Planning Activity Level.*

Space designated for inbound baggage includes space used for ground service equipment circulation and equipment facilitating the transfer of bags from the baggage carts to the carousel. With the shift going to slope-faced carousels, additional inbound baggage make-up space will be needed to support the change in grade of conveyor systems. **Table 3-13** summarizes the updated inbound baggage makeup requirements, which includes space for offload belts, driving lanes, and conveyor belt circulation.

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Table 3-13: Summary of Inbound Baggage Makeup Area Requirements

	Existing	2022	PAL[1] 1	PAL 2	PAL 3	PAL 4
# of Baggage Claim Carousels	3	3	4	4	4	5
Total SF for Inbound Baggage Make Up	1,920	10,500	14,000	14,000	14,000	17,500

Source: *Mead & Hunt, 2023.*

Note: *[1] PAL = Planning Activity Level.*

Customs and Border Protection

All international passengers must be processed at a point-of-entry (POE) prior to entering the United States, whether or not they are terminating their journey at the Airport or connecting to a domestic flight. Each POE is a fully independent facility within the Airport, with Customs and Border Protection (CBP) administrative offices and facilities capable of processing, terminating, and connecting passengers. A POE typically includes the following facilities:

- **Sterile Corridor**: This is a secure corridor for international passengers deplaning and entering the primary processing area.

- **Primary Processing**: The initial passenger screening to process passports consists primarily of Automated Passport Control and Global Entry kiosks. Global Entry is part of CBP's Trusted Traveler program; it allows the expedited clearance of pre-approved, low-risk travelers into the United States.
- **International Baggage Claim:** This baggage claim hall is for international passengers; all passengers must reclaim their bags prior to exiting the POE.
- **Exit Control/Inspection Area:** This represents the final stages of the POE process. Typically, passengers with reclaimed baggage are inspected by officers at podiums before exiting the POE into the US Territory. However, if an officer recommends further search of a passenger or baggage, then the targeted party must be processed through secondary screening.
- **Secondary Processing:** Secondary screening areas accommodate the screening of passengers and baggage not permissible into the United States.

Currently, no international air carrier flights that are not pre-cleared serve PSP. However, throughout the planning horizon, it is anticipated that international carriers will enter the market and would require a CBP facility. Sizing the CBP facility depends on the peak hour international passengers. If more than 250 international passengers require processing, a larger CBP footprint is required. For PSP, it is anticipated the number of international passengers being processed will exceed 250 at PAL 1 with a B787 and narrowbody being processed simultaneously. **Table 3-14** summarizes the facility requirements for CBP activities.

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Table 3-14: Federal Inspection Services Requirements

	Existing	2022	PAL[1] 1	PAL 2	PAL 3	PAL 4
Peak Hour International Passengers	-	151	251	251	251	251
Primary Processing and Inspection (SF)	-	8,000	10,000	10,000	10,000	10,000
Secondary Processing and Inspection (SF)	-	2,000	2,000	2,000	2,000	2,000
Support Spaces (SF)	-	8,000	8,000	8,000	8,000	8,000
Total FIS[2] Area	**-**	**18,000**	**20,000**	**20,000**	**20,000**	**20,000**

Source: *Mead & Hunt, 2023.*

Notes: *[1] PAL = Planning Activity Level.*

[2] FIS = Federal Inspection Services.

Concessions

A concessions program includes food and beverage, convenience retail, specialty retail, and concessions support space throughout the Airport. In general, the potential commercial demand at an airport is driven by annual enplanement demand. Concession demand is expressed in many ways; however, for this study, the amount of space (SF) per 1,000 enplanements was used for each concession type. The assumptions for space per 1,000 enplaned passengers for each concession type was taken from an in-terminal concession study conducted for the Airport in 2019.

Table 3-15 and **Table 3-16** contain concession space requirements for pre- and post-security concessions.

Table 3-15: Pre-Secure Concessions Requirements

	Unit	Existing	2022	PAL[1] 1	PAL 2	PAL 3	PAL 4
Annual Enplanements		1,500,618	1,500,618	1,980,000	2,330,000	2,725,000	3,157,000
% of Total Concessions Program Pre-Security		20%					
Food and Beverage (F&B)	8.6 SF/1K Enplanements	460	2,600	3,500	4,100	4,700	5,500
Specialty Retail (SR)	2.0 SF/1K Enplanements	284	700	800	1,000	1,100	1,300
Convenience Retail (CR)	2.1 SF/1K Enplanements	Incl.	700	900	1,000	1,200	1,400
Pre-Secure Concession Storage	15% of F&B, 20% of CR, 15% of SR	6,916	700	800	1,000	1,200	1,300
Total Area for Pre-Secure Concessions		**7,660**	**4,700**	**6,100**	**7,100**	**8,200**	**9,500**

Source: *Mead & Hunt, 2023.*

Note: *[1] PAL = Planning Activity Level.*

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Table 3-16: Post-Secure Concessions Requirements

	Unit	Existing	2022	PAL[1] 1	PAL 2	PAL 3	PAL 4
Annual Enplanements		1,500,618	1,500,618	1,980,000	2,330,000	2,725,000	3,157,000
% of Total Concessions Program Pre-Security		80%					
Food and Beverage (F&B)	8.6 SF/1K Enplanements	9,777	10,330	13,700	16,100	18,800	21,800
Specialty Retail (SR)	2.0 SF/1K Enplanements	2,003	2,500	3,200	3,800	4,400	5,100
Convenience Retail (CR)	2.1 SF/1K Enplanements	1,847	2,600	3,400	4,000	4,600	5,400
Pre-Secure Concession Storage	15% of F&B, 20% of CR, 15% of SR	2,570	2,500	3,300	3,800	4,400	5,200
Total Area for Pre-Secure Concessions		**14,350**	**17,930**	**23,600**	**27,700**	**32,200**	**37,500**

Source: *Mead & Hunt, 2023.*

Note: [1] *Planning Activity Level.*

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Restrooms

Programming for restroom spaces consists of defining the space required to accommodate demand for men's and women's fixtures, family restrooms, service janitor closets, and mother's nursing stations. Programming for restroom facilities at PSP followed guidance from ACRP Report 226: *Planning and Design of Airport Terminal Restrooms and Ancillary Spaces*. **Table 3-17** and **Table 3-18** show the results of the analysis.

Table 3-17: Pre-Secure Restroom Requirements

	Existing	2022	PAL[1] 1	PAL 2	PAL 3	PAL 4
Total Peak Hour O&D Passengers	2,647	2,647	2,712	3,021	3,343	3,157,000
Visitor Ratio	1.10					
Design Demand	-	2,912	2,983	3,323	3,677	4,117
Total Male Fixtures	15	13	14	15	17	19
Total Female Fixtures	8	17	17	19	21	24
Total Area for Pre-Secure Restrooms	**1,734**	**4,200**	**4,400**	**4,800**	**5,400**	**6,100**

Source: *Mead & Hunt, 2023.*

Note: [1] *PAL = Planning Activity Level.*

Table 3-18: Post-Secure Restroom Requirements

	Existing	2022	PAL[1] 1	PAL 2	PAL 3	PAL 4
Total Peak Hour O&D Passengers	2,647	2,647	2,712	3,021	3,343	3,157,000
Peak 20-Minutes Passenger Demand	45% of Peak Hour					
Design Demand	60%					
Total Male Fixtures	23	25	25	28	31	35
Total Female Fixtures	23	32	32	35	39	44
Total Area for Post-Secure Restrooms	**4,832**	**8,000**	**8,000**	**8,900**	**9,800**	**11,100**

Source: *Mead & Hunt, 2023.*

Note: *[1] PAL = Planning Activity Level.*

Circulation

Adequate circulation is critical to move passengers from one functional area to the next in an efficient and comfortable manner. Often times, circulation is based on available space created by another functional area or constraint, such as concourse width, or limited area adjacent to a check-in, or passenger security screening functions due to changes in processes over the years. Circulation is typically split into two areas: secure and non-secure. Minimum clear circulation widths for public areas are 20 feet between major functional elements, such as check-in. For a double-loaded concourse, a 20-foot minimum is recommended. For non-public areas, such as back of house spaces, office space, etc. the width should be determined by the function (i.e., moving supplies in a corridor near a loading dock) life safety/egress, accessibility, and local building codes. Assumptions for circulation are as follows:

- **Public Circulation:** 30 percent of all public-serving space including pre-secure concessions, pre-secure restrooms, baggage claim, baggage service offices, check-in area, rental car offices, security screening checkpoint, and meeting and greeting areas.
- **Non-Public Circulation:** 30 percent of all non-public space including airline ticket offices, administrative offices, back-of-house concessions areas, and the Airport support spaces.
- **Vertical Circulation:** 2 percent of all gross space.

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Support and Building Systems

Support functions, such as operations, maintenance, and building systems are typically based on a percentage of the overall facility or incremental growth throughout the planning period based on passenger growth. For these areas, the following percentages were applied:

- **TSA Administrative Space**: 15 percent of all TSA passenger screening and baggage screening space.
- **Operations and Maintenance Space**: 3 percent of all gross space.
- **Airport Administrative Space**: An assumption was made that staff would increase with growing passenger activity. The amount of space to accommodate that staff was assumed to be 4 percent of total space.
- **Building Systems and Utilities:** 12.8 percent of all gross space.

Terminal Facility Requirement Summary

Table 3-19 summarizes the terminal space requirements with totals. Initial terminal development alternatives in the following chapter will use these square footage recommendations as guidelines and targets; however, the alternatives may not exactly achieve the program square footage requirements.

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Table 3-19: PSP Terminal Facility Requirements

Terminal Functions	Units	Terminal Requirements					
		Existing	2022	PAL 1	PAL 2	PAL 3	PAL 4
Annual Enplanements		1,500,618	1,500,618	1,980,000	2,330,000	2,725,000	3,157,000
Total Peak Hour Enplanements		1,589	1,589	1,727	1,748	2,008	2,163
Total Peak Hour Deplanements		1,638	1,638	1,773	1,908	2,224	2,567
Check-In Hall							
Full-service counter positions	EA	51	48	55	57	61	65
Check-in area (includes active check-in)	SF	3,008	2,400	2,700	2,800	3,000	3,200
Check-in queue area	SF	5,923	6,500	7,500	7,700	8,300	8,800
Kiosks positions	EA	24	12	13	14	19	20
Kiosks footprint area	SF	-	500	600	600	800	800
Bag-drop position	EA	10	10	14	16	20	24
Bag-drop position area	SF	-	500	700	800	1,000	1,200
Bag-drop queuing area	SF	-	900	1,200	1,300	1,700	2,000
Airline ticket office area	SF	6,242	8,000	8,600	8,600	9,200	9,800
Subtotal	**SF**	**15,173**	**18,800**	**21,300**	**21,800**	**24,000**	**25,800**
Outbound Baggage Screening and Baggage Make-up							
Number of Level 1 EDS units	EA	5	4	4	4	4	4
Level 1 EDS area	SF	(incl.)	12,000	12,000	12,000	12,000	12,000
Number of Level 2 OSR stations	EA	2	2	2	2	3	3
Level 2 OSR area	SF	(incl.)	400	400	400	600	600
Number of Level 3 ETD units	EA	(incl.)	3	3	3	4	4
Level 3 ETD area	SF	(incl.)	450	450	450	600	600
TSA baggage screening room	SF	8,896	22,500	22,500	22,500	23,100	23,100
Outbound baggage make-up area	SF	26,300	29,250	29,250	29,250	29,250	39,000
Subtotal	**SF**	**35,196**	**51,750**	**51,750**	**51,750**	**52,350**	**62,100**
Security Screening Checkpoint							
Checkpoint lanes	EA	6	7	7	7	8	10
Checkpoint screening area	SF	7,034	13,300	13,300	13,300	15,200	19,000
Checkpoint queue area	SF	5,500	4,200	4,200	4,200	4,800	6,000
Checkpoint exit lane	SF	1,000	1,400	1,400	1,400	1,600	2,000
U.S. Customs Border and Protection	SF	-	18,000	20,000	20,000	20,000	20,000
Subtotal	**SF**	**13,534**	**36,900**	**38,900**	**38,900**	**41,600**	**47,000**
Departure Lounge							
Gates	EA	18	20	23	24	27	32
Departure Lounge	SF	29,242	71,200	82,320	85,880	96,560	114,800
Subtotal	**SF**	**29,242**	**71,200**	**82,320**	**85,880**	**96,560**	**114,800**
Baggage Claim and Inbound Baggage Handling							
Number of carousels	EA	3	3	4	4	4	5
Claim area (carousels)	SF	11,391	17,400	23,200	23,200	23,200	29,000
Baggage service offices	SF	697	840	980	980	1,120	1,260
Inbound baggage offload area	SF	1,920	10,500	14,000	14,000	14,000	17,500
Subtotal	**SF**	**14,008**	**28,740**	**38,180**	**38,180**	**38,320**	**47,760**
Concessions							
Pre-secure Concessions							
Food & Beverage	SF	460	2,600	3,500	4,100	4,700	5,500
Retail	SF	284	1,400	1,700	2,000	2,300	2,700
Concessions Support and Storage	SF	6,916	700	900	1,000	1,200	1,300
Post-secure Concessions							
Food & Beverage	SF	9,777	10,330	13,700	16,100	18,800	21,800
Retail	SF	3,972	5,100	6,600	7,800	9,000	10,500
Concessions Support and Storage	SF	2,570	2,500	3,300	3,800	4,400	5,200
Rental car Concessions							
Rental car offices	SF	2,029	-	-	-	-	-
Queuing area	SF	2,330	-	-	-	-	-
Subtotal	**SF**	**28,338**	**22,630**	**29,700**	**34,800**	**40,400**	**47,000**
Restrooms							
Pre-security men fixtures	fixtures	15	13	14	15	17	19
Pre-security women fixtures	fixtures	6	17	17	19	21	24
Pre-security restroom area	**SF**	**1,721**	**4,200**	**4,340**	**4,760**	**5,320**	**6,020**
Post-security men fixtures	fixtures	23	25	25	28	31	35
Post-security women fixtures	fixtures	23	32	32	35	39	44
Post-security restroom area	**SF**	**4,832**	**7,980**	**7,980**	**8,820**	**9,800**	**11,060**
Non-public restrooms	SF	1,973	3,246	4,295	5,044	5,918	6,842
Mother's nursing stations	SF	90	270	270	270	270	360
Animal service relief area	SF	Included in Outdoor Space					
Subtotal	**SF**	**8,616**	**15,696**	**16,885**	**18,894**	**21,308**	**24,282**
	Total men fixtures	**38**	**38**	**39**	**43**	**48**	**54**
	Total women fixtures	**29**	**49**	**49**	**54**	**60**	**68**
Support Functions							
TSA administration and staff support	SF	6,025	6,000	6,000	6,000	6,500	7,300
Operations and maintenance	SF	7,606	10,000	13,200	15,600	18,300	21,300
Airport administrative areas	SF	7,901	13,000	17,200	20,200	23,700	27,400
Lounge/Play Area/Additional Seating	SF	10,326	10,326	13,200	13,800	15,500	18,400
Subtotal	**SF**	**31,858**	**39,326**	**49,600**	**55,600**	**64,000**	**74,400**
Circulation							
Pre-security public circulation	SF	19,725	32,000	37,900	39,400	42,500	49,200
Post-security public circulation	SF	51,707	42,600	50,000	53,500	59,800	69,300
Non-public circulation	SF	10,426	24,990	28,440	30,060	33,000	37,620
Vertical circulation	SF	3,442	3,500	8,900	9,400	10,300	12,000
Subtotal	**SF**	**85,300**	**103,090**	**125,240**	**132,360**	**145,600**	**168,120**
Other Areas							
Building Systems and Utilities	SF	38,841	49,700	58,100	61,300	67,100	78,300
Subtotal	**SF**	**38,841**	**49,700**	**58,100**	**61,300**	**67,100**	**78,300**
TOTAL AREA	**SF**	**300,106**	**437,900**	**512,000**	**539,500**	**591,300**	**689,600**
Estimated surplus/deficiency (-) compared with existing facility			-137,800	-211,900	-239,400	-291,200	-389,500

Source: Mead & Hunt, 2023.

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LANDSIDE GROUND TRANSPORTATION REQUIREMENTS

Introduction

This analysis uses the FAA approved forecasts of enplaned passengers from the previous chapter and focuses on vehicle roadway access and circulation, the terminal curbside, pedestrian infrastructure, transit access, and four primary parking components found in the immediate terminal area. These components include public, employee, rental, and taxi/commercial vehicles.

Terminal Curb Front

The terminal curb front requirements are derived from the Design Day Flight Schedules (based on the current day, March 6, 2023, maximum day) for the high growth scenario at four Planning Activity Levels (PAL) with PAL 4 representing the 2042 horizon year scheduled flights and PALs 1- 3 intermediate years that trigger different schedule patterns. For each PAL, the seat capacity for each flight is multiplied by the expected passenger load factor[1] to estimate the number of passengers arriving or departing by their scheduled arrival or departure times. The flights and passenger demand by PAL are shown in **Table 3-20**.

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Table 3-20: Design Day Flight and Passenger Demand Summary

	PAL 1	PAL 2	PAL 3	PAL 4
Arriving				
Flights	79	91	106	122
Passengers	8,455	10,078	11,838	13,709
Departing				
Flights	79	91	106	122
Boarding	8,455	10,078	11,838	13,709
Total				
Flights	158	182	212	244
Enplanements	16,909	20,156	23,675	27,417

Source: *Mead & Hunt, 2023.*

As described in the following sections the following steps were conducted to determine the Landside Requirements:

- The passengers arriving and departing at the curbside are determined from their scheduled gate arrivals and departure times based on the times it takes to rent/return cars, park, check/claim bags/ticketing, go through security and customs and travel through the Airport and deplane or board the aircraft. Time is added for arriving passengers (lag time) and it is subtracted for departing passengers (lead time).

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[1] Load factors vary from 0.72 – 0.90 (with 2 International Flights set at 0.49 - 0.52)

- Based on this curbside demand by time of day the peak hour is selected.
- The distribution of curbside passengers by mode of arrival/departure is then estimated based upon historical values and expected changes in the future.
- Curbside Requirements and Levels of Service (LOS) are then estimated using the Airport Cooperative Research Program (ACRP) Report 40 Quick Analysis Tool for the Airport Roadways (QATAR) Workbook and the existing/planned curbside characteristics. To derive the requirements adjustments to Curb lengths and other inputs are made until LOS C design goals are met.
- These are then used as inputs for the circulation and mobility planning and landside plans for travel to/from/ and within the Airport grounds.

Curbside Passenger Demand

Curbside demand by time of day is determined by adjusting scheduled arrivals and departures by the time it takes to arrive and depart by passenger segment. The passenger segments used for this analysis and associated assumptions are:

- Check Baggage/ticketing counter = 61 percent domestic, 80.5 percent international
- Rent a car on site = 23 percent
- Rent a car off site = 1 percent
- Pre-check security = 45 percent
- Percent of international versus domestic based on flight origin/destination

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These are combined for each passenger to create passenger scenarios (e.g. a passenger may rent a car on site, check a bag, use pre-check security, and then arrive at the gate 30 minutes before departure to be in time for boarding) and the time it takes to carry out each activity for the scenario summed: For arrivals, time is added to the scheduled arrival time, and for departures time is subtracted from the scheduled departure time. These Lag and Lead times are shown in **Table 3-21** and in **Table 3-22**. An additional calculation is also provided for those that are driving and parking at the Airport to estimate when they enter the Airport property and must circulate to the parking entrances, find parking, unload, and travel to the curbside. This is needed later in the process to determine roadside level of service.

Table 3-21: Lag and Lead Time for Scheduled Arrivals and Departures (Minutes Added to Scheduled Arrival Time)

Name	Peak	Off Peak
Disembark	15	15
Customs	20	15
Gate to Out	5	5
Baggage	20	20
Out to Curb	5	5
Rental Process	30	15
Curb Pickup	5	5
Curb to Park	5	5

Source: *Mead & Hunt, 2023.*

Table 3-22: Lag and Lead Time for Scheduled Arrivals and Departures (Minutes Subtracted from Time)

Name	Peak	Off Peak
Rental Return	10	5
Curb to Security	5	5
Baggage Check	20	10
Pre-Check	15	7
No Pre-Check	30	15
Security to Gate	5	5
Gate Arrival to Departure	30	30

Source: *Mead & Hunt, 2023.*

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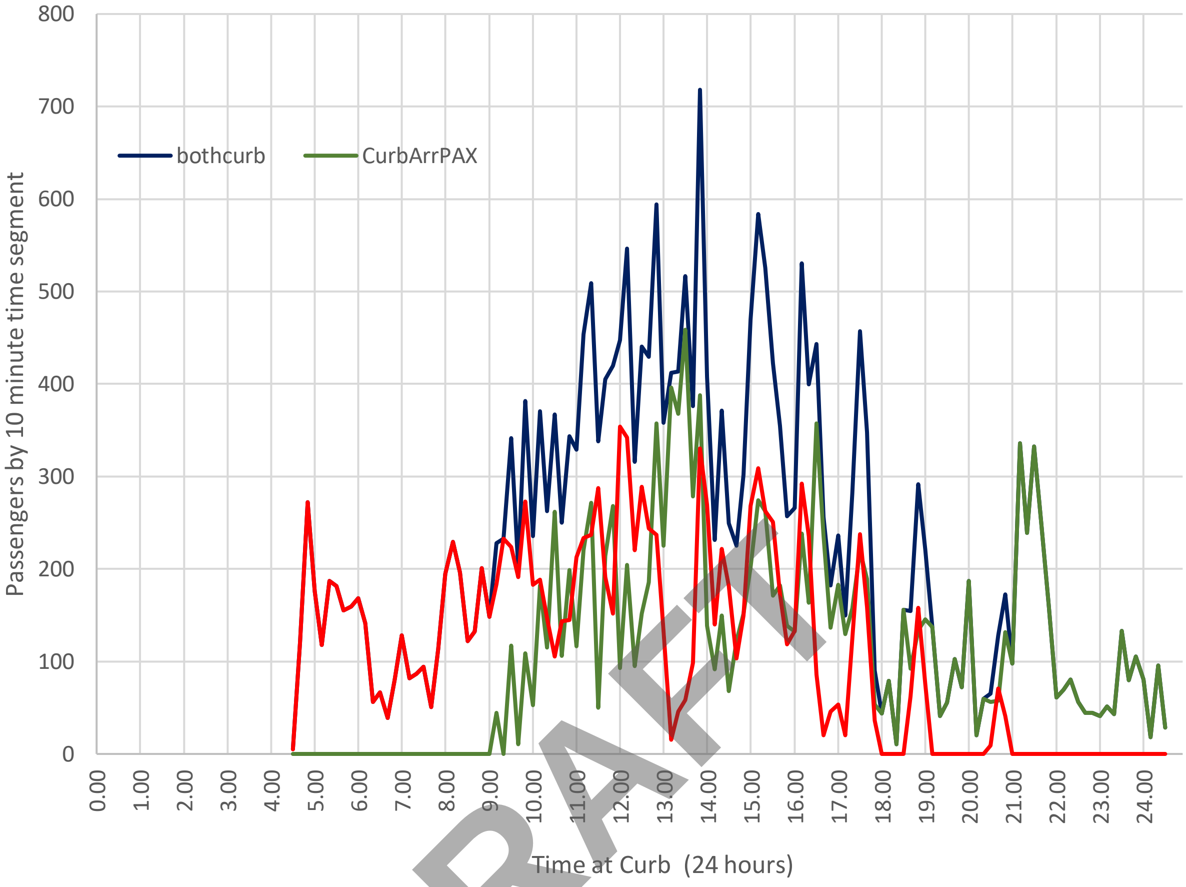
The passengers at the curbside are then aggregated by 10-minute time segments and the arrival and departure passenger demands combined to provide the total passenger demand by time of day at the curbside. The curbside peak hour is then selected from this distribution. For the high demand PAL 4 scenario this was found to be from 12:00 to 13:00 Pacific Standard Time (PST).

Figure 3-11 shows the distribution of passengers arriving, departing, and combined at the curbside in 10-minute time segments. As can be seen, the overall passenger demand at the curbside shifts to earlier in the day and later in the day than the scheduled times, and is more spread out with the earliest departing passengers reaching the curbside between 4 and 5 am in order to ensure that they make their departing flights, and passengers from arriving flights arriving before midnight reaching the curbside after midnight due to the time it takes to disembark, travel through the airport, retrieve baggage, etc.. The peak 10-minute time segment is 720 passengers. It is interesting that the peak hour curbside demand (between Noon and 1 pm) demand at the curb is fairly regular averaging 450 passengers per 10-minute segment, while the max 10 minute segment comes a little bit after the peak hour (at 1:50 to 2:00 pm).

Figure 3-11: Passenger Arrivals and Departure at Curbside by 10-minute Time Segment



Source: *Mead & Hunt, 2023.*

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Mode Split and Passenger Volume Development for QATAR Analysis

The overall peak hour passenger volumes shown in **Table 3-23** are then converted to different vehicle demands for input into the QATAR process. The previous Master Plan for PSP included a survey that relayed the vehicular mode split at the curbside. This mode split, along with passenger occupancy levels obtained from ACRP-40, were used to create an estimate of the passenger demand mode split at the curbside for the Palm Springs Airport and can be seen in **Figure 3-12.**

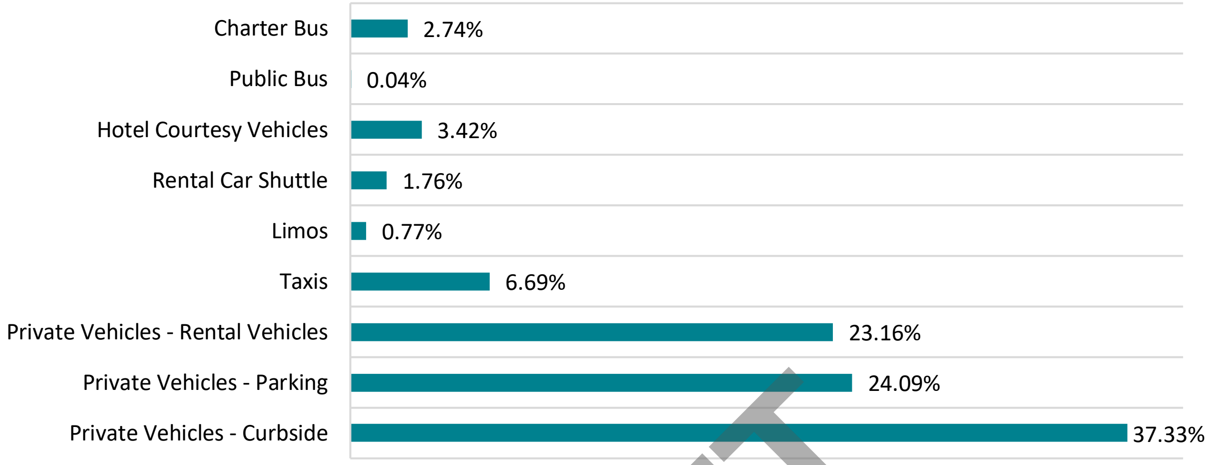
Table 3-23: Peak Hour Passenger Volumes

Passenger Type	Existing Hourly Design Volume	PAL 4 – Hourly Design Volume
Departures Facility	1,075	1,800
Arrivals Facility	1,325	2,100
Mixed Traffic Facility	**1,700**	**2,900**

Source: *Mead & Hunt, 2023.*

Figure 3-12 shows that private auto is the dominant mode at the Airport, with all three forms of private vehicle motorists totaling almost 85 percent of all passengers. The remaining 15 percent is split between all other modes, such as transit, taxi and ride-hail services, and hotel shuttle vehicles.

Figure 3-12: Passenger Mode Splits at Curbside



Source: *Mead & Hunt, 2023.*

The passenger mode splits were then applied to the total passenger demand volumes for each of the Planning Activity Level Scenarios (PAL 1-4) and tabulated. All the volumes from this process are depicted in **Table 3-24** for the Inner Curb, and **Table 3-25** for the Outer Curb.

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Table 3-24: Vehicular Volumes (by mode) for PSP Inner Curb

	Existing	PAL 1	PAL 2	PAL 3	PAL 4
Private Vehicles - Curbside	530	610	695	770	900
Private Vehicles – Circulating	125	140	160	180	210
Rental Vehicles – Curbside	45	55	60	65	80
Rental Vehicles – Circulating	140	155	180	200	230
Taxis	25	30	35	35	45
Limos	8	8	8	11	11
Charter Bus	5	5	5	5	5
Total	**878**	**1,003**	**1,143**	**1,266**	**1,481**

Source: *Mead & Hunt, 2023.*

Table 3-25: Vehicular Volumes 9by mode) for PSP Outer Curb

	Existing	PAL 1	PAL 2	PAL 3	PAL 4
Private Vehicles – Circulating	80	95	110	120	140
Taxis	50	50	65	75	85
Limos	2	2	2	4	4
Shuttles	5	10	10	10	15
Courtesy Vehicles	20	25	30	35	40
Delivery Vehicles	10	10	15	15	20
Total	**167**	**192**	**232**	**259**	**304**

Source: *Mead & Hunt, 2023.*

Curbside Analysis

The vehicular volumes developed in the last section are used as inputs and are entered into the Quick Analysis Tool for the Airport Roadways (QATAR) spreadsheet. The QATAR spreadsheet uses the entering vehicle volumes depicted in **Table 3-24**, and **Table 3-25**, along with assumed curbside dwell times, and geometric characteristics such as number of parking, double parking lanes, and through lanes to determine the Level of Service (LOS) of the terminal curbside.

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The QATAR analysis of the existing curbside includes seven curbside zones (three active, four crosswalk). The current linear feet of curb both for the inner roadway, and outer roadway facility is approximately 830 feet in length. The explanation of the curbside zones is important because QATAR is sensitive not only to the length of the curbside zones utilized, but also to how the vehicular volumes are assigned. Google Aerial Imagery was consulted to accurately depict not only the existing curb lengths for the terminal, but to also identify important signage that relays where certain types of vehicles park, and how they are allowed to circulate throughout the Airport roadways. These unique characteristics for the Palm Springs Airport were consulted and used to assign the volumes developed in **Table 3-24**, and **Table 3-25** to one of the three active curbside zones for all scenarios analyzed.

Once the volumes were assigned, the QATAR analyses were run for the existing and PAL 1-4 scenarios. The results of these analyses are depicted in **Figure 3-13** for the Inner Curb, and **Figure 3-14** for the Outer Curb. The QATAR results are also tabulated in **Table 3-26** and **Table 3-27**.

In **Table 3-26** and **Table 3-27**, the terms “Circulating LOS” and “Curbside LOS” are utilized. The Circulating LOS refers to the outer lanes of the Airport road that are meant to service through-traffic to non-curb related uses of the Airport like parking and rental car facilities, as well as moving motorists away from the Airport and back to the regional roadway network. The Curbside LOS, refers to the two lanes closest to the curb, where most of the pick-up and drop-off actions for Airport passengers occurs. The distinction is important because a deficiency in one section of the road, may have different remedies than a deficiency in the other.

Table 3-26: Terminal Curbside Zone Performance (Inner Roadway Facility)

	Existing	PAL 1	PAL 2	PAL 3	PAL 4
Number of Ped Crossings	4	4	4	4	4
Number of Active Zones	3	3	3	3	3
Number of Failing Zones	3	3	3	3	3
Hourly Design Volume	878	1,003	1,143	1,266	1,481
Circulating LOS	D	E	E	F	F
Curbside LOS	A	C	C	D	D

Source: *Mead & Hunt, 2023.*

Table 3-27: Terminal Curbside Zone Performance (Outer Roadway Facility)

	Existing	PAL 1	PAL 2	PAL 3	PAL 4
Number of Ped Crossings	4	4	4	4	4
Number of Active Zones	3	3	3	3	3
Number of Failing Zones	0	0	0	0	0
Hourly Design Volume	167	192	232	259	304
Circulating LOS	A	A	A	A	A
Curbside LOS	A	A	A	A	A

Source: *Mead & Hunt, 2023.*

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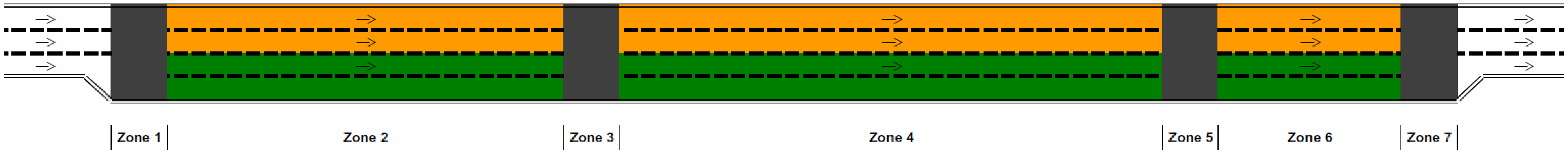
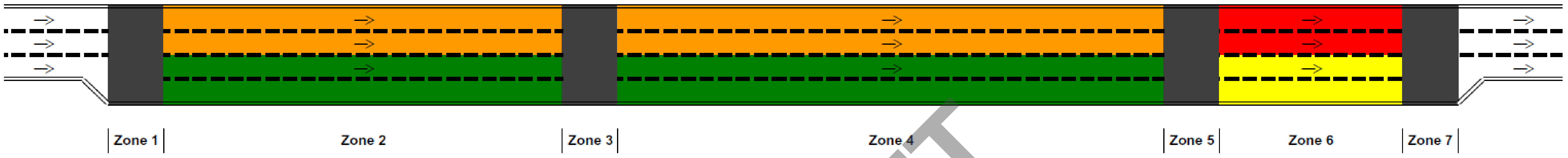
Figure 3-13: QATAR Results for Inner Curb

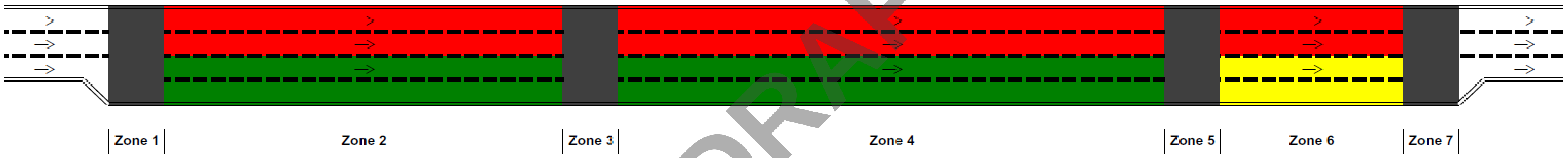
Existing


Zone 1
Zone 2
Zone 3
Zone 4
Zone 5
Zone 6
Zone 7

PAL 1


Zone 1
Zone 2
Zone 3
Zone 4
Zone 5
Zone 6
Zone 7

PAL 2


Zone 1
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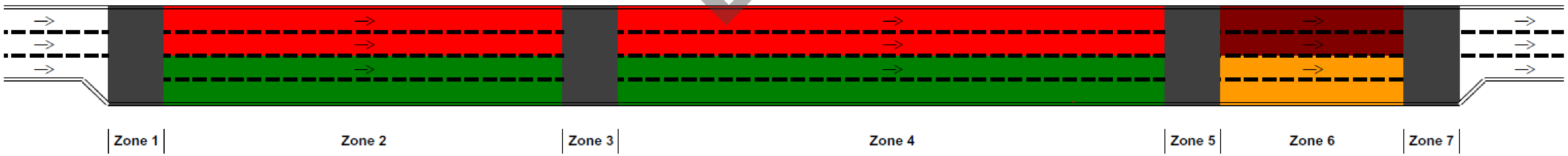
PAL 3


Zone 1
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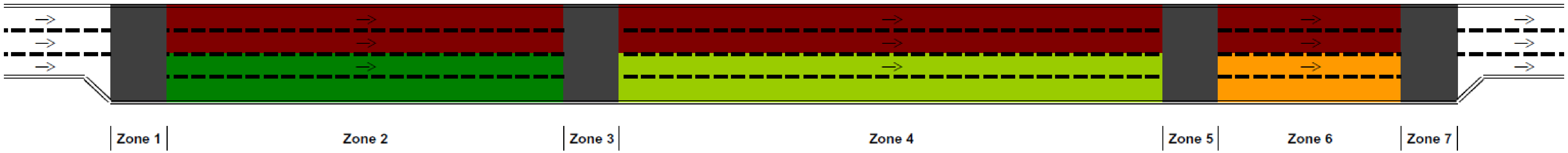
Zone 7

PAL 4


Zone 1
Zone 2
Zone 3
Zone 4
Zone 5
Zone 6
Zone 7

Source: *Mead & Hunt, 2023.*

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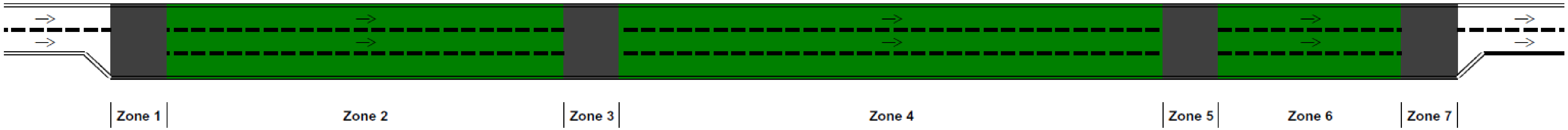
Figure 3-14: QATAR Results Outer Curb

Existing


Zone 1
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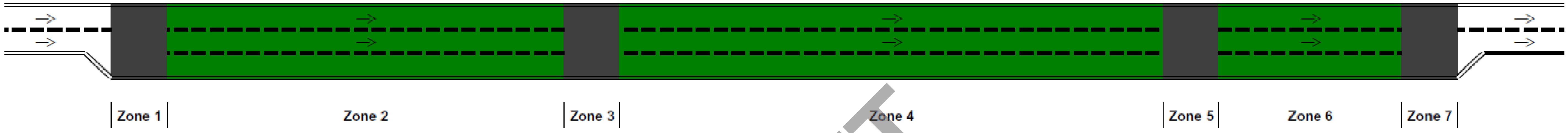
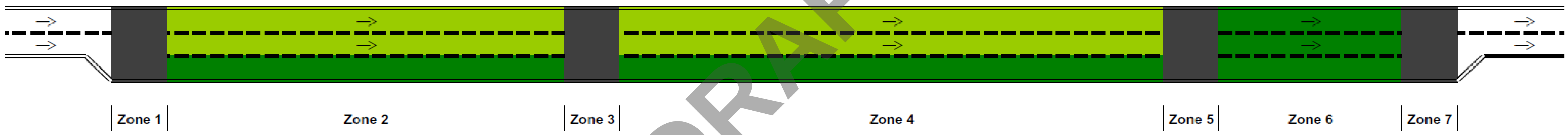
Zone 6
Zone 7

PAL 1-3


Zone 1
Zone 2
Zone 3
Zone 4
Zone 5
Zone 6
Zone 7

PAL 4


Zone 1
Zone 2
Zone 3
Zone 4
Zone 5
Zone 6
Zone 7

Source: *Mead & Hunt, 2023.*

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Curb Extensions were explored, along with the vehicular volumes developed in the PAL 4 scenario, and after 3 iterations (575-foot extension, 1200-foot extension, 650-foot extension with curb zone consolidation), the poor roadway performance could still not be fixed from curb lengthening alone. The anticipated problem in the future will be due to the number of vehicles being routed through the Airport road and is a capacity/volume-related problem. Therefore, alternative scenarios that aim to address the anticipated performance problems in the future should focus on either improving roadway capacity (i.e., adding travel lanes) or decreasing the number of vehicles that traverse the Airport road (i.e., re-routing rental vehicles to regional roadways, shifting parking locations, etc.).

Pedestrian Facilities

Sidewalks & Pedestrian Crossings

Within the terminal area there is a mix of sidewalks that run along the major regional roadways, and crosswalks along the legs of key intersections. There is continuous sidewalk in both directions for all regional roadways within the study area, except for Kirk Douglas Way. There are also visible unmarked crosswalks for all legs of key intersections except for the east leg of the El Cielo Road & Kirk Douglas Way/El Baristo Road intersection.

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PARKING AND RENTAL CAR FACILITY REQUIREMENTS

Per Chapter 1 – *Inventory of Existing* Conditions, in 2022 PSP reached a peak of 1.5 million enplanements. In the first four months of 2023, PSP has had higher numbers of monthly enplanements than the previous year when looking at a month-to-month comparison, showing that it is on track to see more enplanements in 2023 than in the previous year. By 2042, PSP is projected to reach between 2.5 and 3.2 million enplanements. This section describes how the forecasted growth in commercial passengers could impact automobile public parking demand, employee parking demand, and rental car needs through 2042 at PSP. The facilities addressed in this section include general public parking, employee parking, and rental car parking facilities.

Parking is often the first and last impression that customers and visitors have of their travel experience through an airport, and because public parking is an important revenue source for the operation and maintenance of the Airport, it is critical to maintain appropriate facilities. Planning for parking facilities that meet the needs of PSP's customers is an important endeavor that requires an understanding of current facility requirements and whether they are adequate to serve future demand.

Existing Public Parking Demand

Hourly parking transaction data and overnight occupancy counts provided by the Airport's parking operator were analyzed to determine the current on-site demand for public parking at PSP. Parking data were provided for the period spanning December 6, 2022, through May 31, 2023. Based on previous passenger activity data, this is the busier period of the year and captures the peak month with respect to enplanements.

Existing (Baseline) Parking Demand

Table 3-28 provides a summary of the parking demand statistics provided for the public parking lots (main and overflow), cell phone lot, and TNC staging lot, organized by month. The 95th percentile column represents roughly the 2nd busiest day of each month; for the full year, the 95th percentile would exclude roughly the 12 busiest days per year.

Utilizing the hourly parking transaction data and overnight parking counts, we extracted occupancy numbers from the transactions and identified the peak hour for each day. We then calculated the 95th percentile based on the peak hour of each day in the 6-month survey period.

Table 3-28: Current Inventory of Parking Spaces per Lot

Year	Month	Avg. Peak Hour Demand	95th Percentile Peak Hour Demand	Absolute Peak Demand
2022	Dec	1,042	1,584	1,711
2023	Jan	742	876	906
2023	Feb	879	1,034	1,166
2023	Mar	861	1,009	1,032
2023	Apr	927	1,097	1,206
2023	May	787	967	1,000
Avg.		**873**	**1,094**	**1,170**

Source: *Walker Consultants, 2023.*

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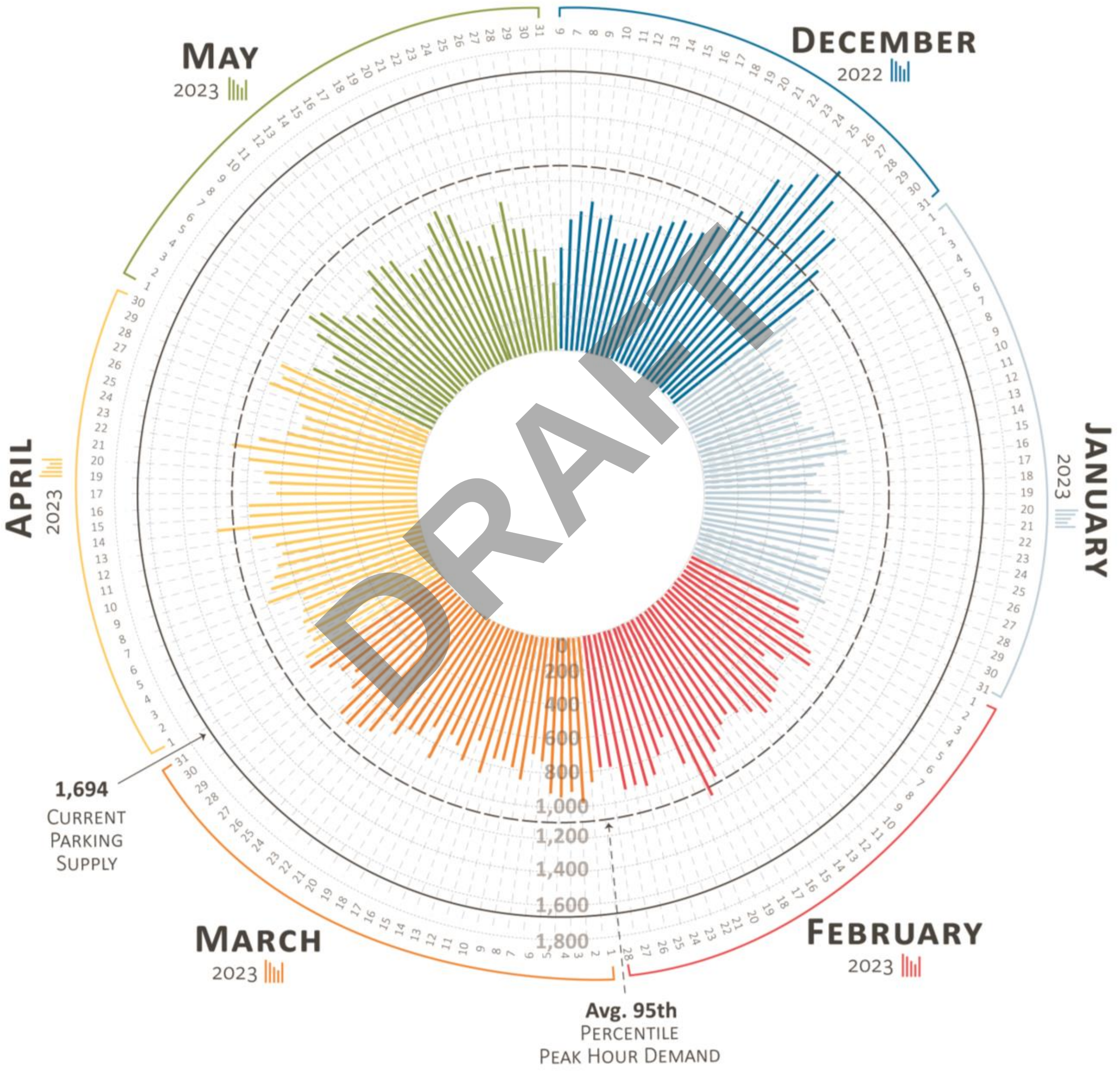
The previous table shows the Average Peak Hour Demand, the 95th Percentile Peak Hour Demand, and the Absolute Peak Demand. Each column is represented as follows:

- **Average Peak Hour Demand:** To find the average peak hour demand, we first identify the peak hour for each day in the 6-month survey period. We then calculate the average based on those identified peak hour demand numbers for each month. Lastly, an average is calculated based on the monthly average figures. Typically, the average demand is not used for planning a parking system.
- **95th Percentile Peak Hour Demand:** To find the 95th percentile, after identifying the peak hour demand for each day, we then calculate the 95th percentile for each month based on each of the identified peak hour demand numbers in the month. We then average the 95th percentile for all months. This average 95th percentile is the design day for the parking system.
- **Absolute Peak Demand:** The absolute peak demand represents the maximum peak hour demand number for each month. For example, December 26, 2022, had 1,711 cars parked at the peak hour, the highest observed in December 2022. As with the average peak hour, parking systems are typically not designed to the peak value as this tends to result in overbuilding of supply.

Based on the data provided, it appears that PSP experiences the typical spike in parking activity generally around the Christmas holiday, with December 23-27 being the busiest dates. Parking demand throughout the rest of the survey period remains relatively consistent with general upticks between February and April, the historically busy period for commercial enplanements. **Figure 3-15** shows the daily peak hour parking demand for the period between December 6, 2022, and May 31, 2023, and compares it to the current parking supply and average 95th percentile.

Figure 3-15: PSP Monthly Enplanement Trends



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Source: *Walker Consultants, 2023.*

As shown in the figure most days in the survey period had peak hour demand that was well below the current supply of 1,694 spaces. The dotted lined circle shows the average 95th percentile of peak hour demand, or the design day. As shown in the figure, the design day is below the peak day, as it is not recommended that a parking system be designed for the peak.

Although it is not shown in the figure, there were only eight (8) nights in the 6-month survey period where the Overflow Lot was not used, meaning that during the survey period the Overflow Lot was used by at least one vehicle during 95.5percent of the days, according to the overnight count data provided by the operator. However, use of the Overflow Lot does not mean that there were no spaces available in the Main Lot. It is likely that some customers are opting to park in the Overflow Lot as it is priced lower than the Main Lot.

Design Day Demand Ratio

Table 3-29 provides a summary of the design day parking ratio, sometimes referred to as the parking demand ratio. To calculate the design day demand ratio, we take the average 95th percentile demand, divide it by the average monthly enplanements for our survey period, and lastly base it on a ratio of 1,000 enplanements by dividing by 1,000. The following table shows the resulting PSP design day demand ratio.

Table 3-29: Calculated Parking Demand Ratios

Lot	Avg. 95th Percentile Demand	Avg. Monthly Enplanements	Demand Ratio (Per 1,000 enplanements)
Public Parking (Overflow Included)	1,094	178,055	6.4

Source: *Walker Consultants, 2023.*

Note: *The demand ratio represents a blended average of demand ratios for each individual month and may differ slightly from a simple calculation of the values above (i.e., "Avg. 95th Percentile Demand / Avg. Monthly Enplanements / 1,000)*

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Projected Future Public Parking Needs

Passenger enplanements at PSP are expected to grow at an average rate of roughly 4.5 percent compounded annually between 2022 and 2032, and 3.1 percent between 2032 and 2042 under a high growth scenario. This analysis is based on the projected peak month passenger enplanement totals, which are calculated based on 2022 monthly enplanement shares.

Table 3-30 provides a projection of public parking needs based on the projected peak monthly enplanements through the horizon year 2042. Recall that the demand ratios have been calibrated to a 95th percentile design day, meaning that some additional parking or operational changes might be needed to accommodate peak loads on the busiest 10 to 12 days per year, assuming these demand totals are realized.

Please note, however, that the following demand totals have been labeled as "unadjusted" meaning that they do not factor in any potential future changes in driving and parking behaviors that may arise due to future changes in policy (such as increased parking rates) or in the operation of the parking system. These factors are discussed briefly in the next section before arriving at a final parking surplus/deficit conclusion for PSP.

Table 3-30: Projected Unadjusted Future Parking Demand

Year	Total Annual Enplanements	Peak Month Enplanements[1]	Projected Design Day Parking Demand
Existing	1,500,618	202,993	1,289
PAL 1	1,982,000	268,111	1,702
PAL 2	2,329,000	315,051	2,000
PAL 3	2,725,000	368,619	2,340
PAL 4	3,157,000	427,057	2,711

Source: *Walker Consultants, 2023.*

Note: *[1] Peak month enplanement projections from 2027 – 2042 are based on 2022 monthly enplanement shares.*

Adjustments to Projected Demand

The long-term outlook for PSP, through 2042, shows a significant potential increase in parking needs to accommodate the projected growth in enplanements under a high growth scenario. Still, adjustments to the demand model are important to consider as described below.

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Mode Split Adjustment

Though the self-driving technology of autonomous vehicles (AV) coupled with transportation network company (TNCs) service could have an impact on parking demand at airports in the future, projections for the proliferation of these technologies are variable. In our latest research, the timeline for when we might see material changes in the implementation and use of these technologies goes beyond 2040. As such, for this analysis, we assume no change in the mode split, or in other words no reduction in parking demand due to this technology.

Effective Supply Adjustment

To arrive at the projected surplus/deficit conclusions, a parking supply cushion of seven percent is also factored into the design day need. This adjustment helps to ensure that drivers arriving to the Airport do not find every available stall occupied. This can lead to driver frustration, excess circulation, and “poaching” where drivers sit in the drive aisle and wait for motorists to return to their vehicles.

During busy periods, many airports rely on extra signage and parking attendants to direct motorists to the last available stalls in the main lots and then to overflow lots. Therefore, the seven percent effective supply cushion is reduced during these periods and can help to offset typical variations in travel behaviors from month to month. (However, the 6-12 busiest travel days may still need to rely on remote or overflow parking facilities to add to the total supply.)

Projected Parking Need and Surplus / Deficit

Taking into consideration the effective supply adjustment, it is projected that a total adjusted parking need of up to 2,901 parking stalls for the Airport to support 2042 projections, or 1,207 net new stalls. A summary of the parking facility requirements is shown **Table 3-31**.

Table 3-31: Adjusted Public Parking Need Projection

Year	Projected Design Day Parking Demand (Unadjusted)	Effective Supply Adjustment	Total Adjusted Parking Need	Current Supply	Surplus/ Deficit
Existing	1,289	7%	1,379	1,694	**315**
PAL 1	1,702	7%	1,821	1,694	**-127**
PAL 2	2,000	7%	2,140	1,694	**-446**
PAL 3	2,340	7%	2,504	1,694	**-810**
PAL 4	2,711	7%	2,901	1,694	**-1,207**

Source: *Walker Consultants, 2023.*

Allocation of Parking Product Types (Short-Term, Long-Term)

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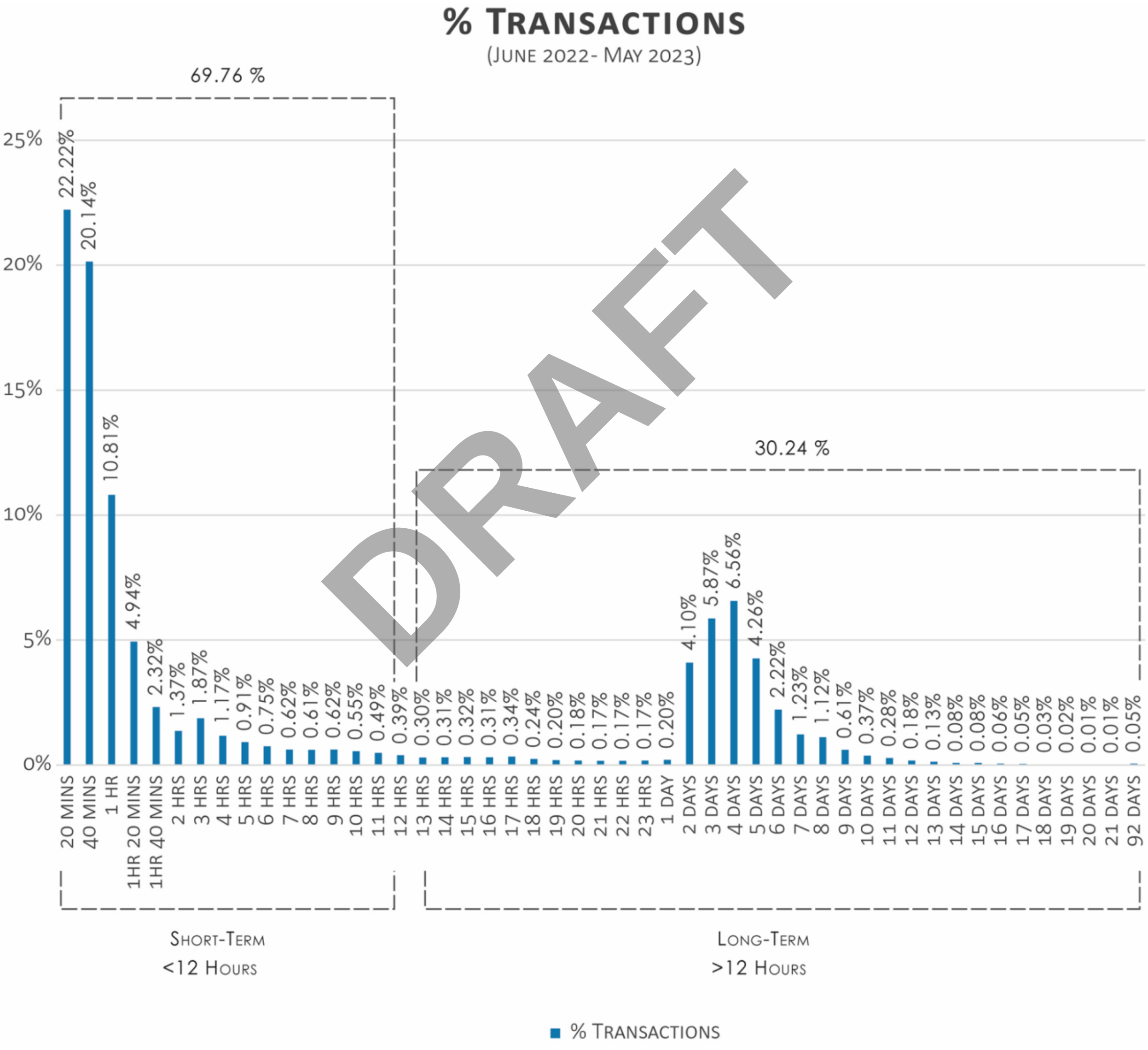
PSP does not currently have a physical separation between short-term and long-term parking lots as the Main Lot serves both types. Instead, the airport uses pricing to distinguish among the different lengths of stay. For example, in terms of short-term parking, the cost is $3 per 20 minutes, and $8 dollars per hour, with a seven (7) minute grace period. In terms of long-term parking, the daily max in the Main Lot is $20 and in the Overflow Lot $18. The price difference effectively serves as the key variance between what would be considered short-term versus long-term parking. In the following section, Walker offers an opinion as to how these two parking types could be allocated at PSP through PAL 4 based on current demand. However, it must be noted that price is and should be the crucial factor in the allocation of parking space types. Demand is a function of price, thus for planning purposes, the airport should not start with a parking supply number based on solely demand, as price is the more appropriate tool for managing a parking system.

The concept of pricing plays a pivotal role in efficiently allocating the limited parking resources available. Short-term or premium parking spaces should be located in convenient and highly sought-after areas relative to longer-term parking as a best practice. This parking should therefore command a higher price relative to less convenient parking due to its proximity to desirable destinations, i.e., near the terminal. This pricing strategy helps maximize revenue while ensuring that those willing to pay a premium have access to prime parking spots. On the other hand, long-term or economy parking spaces, offer a more affordable alternative, providing options for individuals seeking cost-effective solutions or are willing to walk a bit farther. By adjusting prices based on location and demand, the Airport can strike a balance between meeting diverse customer needs and generating revenue to support the maintenance and development of parking infrastructure and operations. The amount of parking to provide in short-term and long-term areas should be a function of price, which in turn allows the Airport the flexibility to manage demand and the size of its parking facilities.

Summary of Parking Duration Data

Vehicle parking duration data were provided by the Airport's parking operator for the period spanning June 2022 to May 2023. The following figure shows the percentage of transactions during the survey period (June 2022 – May 2023) that fell within different durations of time.

Figure 3-16: Summary of Parking Duration (June 2022 – May 2023)



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Source: *Walker Consultants, 2023.*

As shown in **Figure 3-16**, in this analysis we consider parking durations of 12 hours or less to be short-term parking transactions. The percentage of total parking transactions that were 12 hours or less during the survey period was 69.8 percent. In turn, the long-term transactions accounted for 30.2 percent of all transactions. We note, however, that long-term parking has an outsized impact on the number of spaces needed, due to the longer lengths of stay.

In comparison to the current allocation of parking product types, 53 percent of spaces are in the Main Lot (i.e., Short-Term), while 47 percent are in the Overflow Lot (i.e., Long-Term), resulting in more short-term spaces than long-term spaces. However, it is important to note that parking transactions do not necessarily align with the percentage of short-term and long-term vehicles present during the peak hour.

Projection of Parking Allocation by Product Type (Short-Term versus Long-Term)

The allocation of spaces at PSP is currently weighted toward short-term parking (Main Lot) with 53 percent of the spaces allocated to that product. It is projected that the future split between short-term and long-term parking spaces could remain the same or similar as it is today, primarily because, if the Airport builds additional parking, it is likely to occur near the terminal; thus, replacing the surface parking closest to the terminal with a structure. In doing so, the structured parking should be priced at a premium since those spaces are going to be the most convenient and will also be covered from the sun. Due to the likely expansion of spaces occurring near the terminal, short-term products would likely maintain a higher percentage of the supply. **Table 3-32** shows Walker's projected parking needs based on the high enplanement scenarios and shows the potential split among short-term and long-term parking.

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Table 3-32: Projected Future Parking Needs and Short-Term vs. Long-Term Split

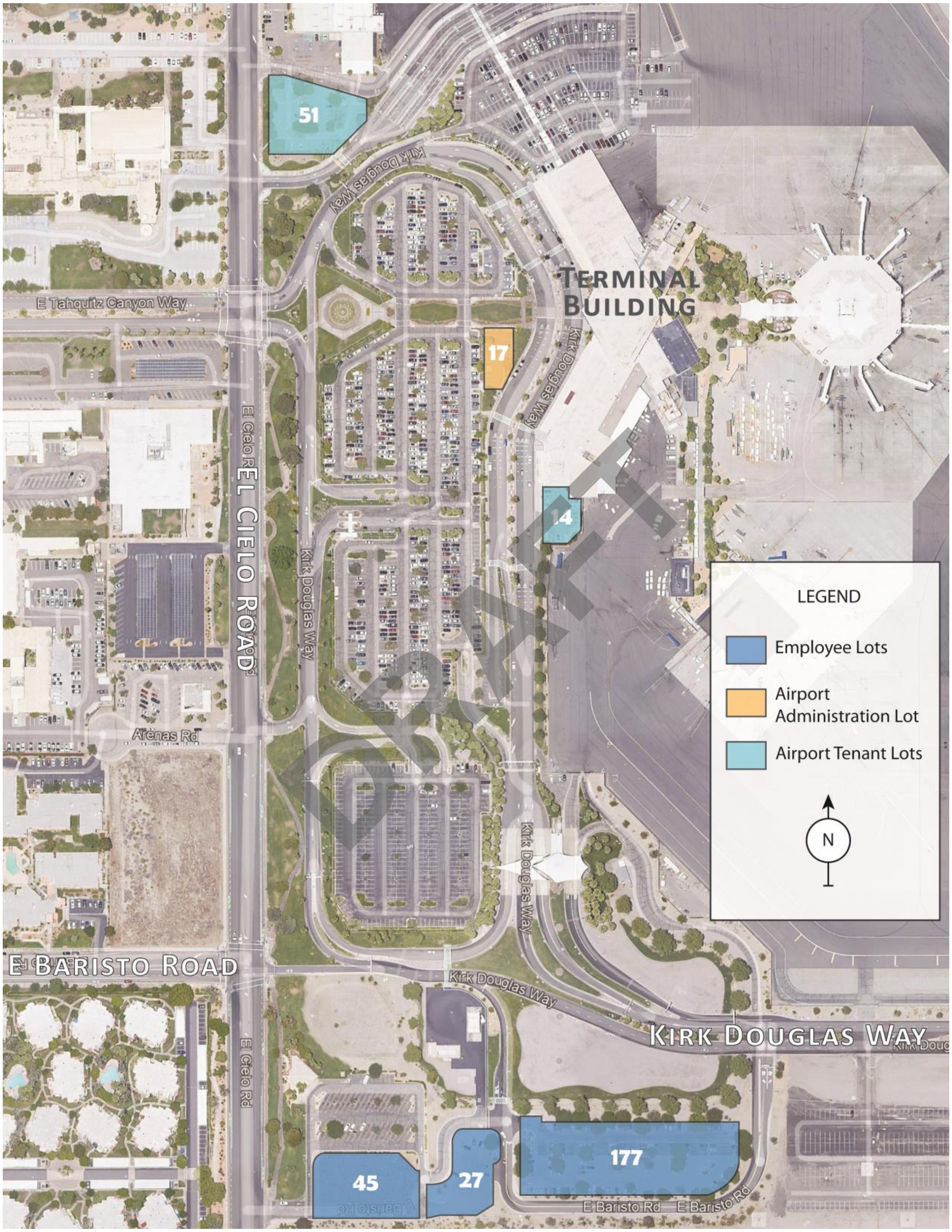
Year	Short-Term Parking %	Long-Term Parking %	Projected Short-Term Spaces	Projected Long-Term Spaces	Total Adjusted Parking Need
Existing	53%	47%	731	648	1,379
PAL 1	53%	47%	965	856	1,821
PAL 2	53%	47%	1,134	1,006	2,140
PAL 3	53%	47%	1,327	1,177	2,504
PAL 4	53%	47%	1,538	1,363	2,901

Source: *Walker Consultants, 2023.*

Employee Parking Requirements

Today, there are six (6) parking areas allocated to employees, airport administration, and tenants of PSP. The following figure shows the locations of the current employee, airport administration, and tenant parking areas. Combined, the five parking areas have approximately 331 parking spaces as illustrated in **Figure 3-17**.

Figure 3-17: Employee, Airport Administration, and Tenant Parking Lots


51
Kirk Douglas Way
TERMINAL BUILDING
E Tahquitz Canyon Way
17
Kirk Douglas Way
El Cielo Rd
EL CIELO ROAD
Kirk Douglas Way
14
LEGEND
Employee Lots
Airport Administration Lot
Airport Tenant Lots
N
Arenas Rd
Kirk Douglas Way
E BARISTO ROAD
Kirk Douglas Way
KIRK DOUGLAS WAY
El Cielo Rd
45
27
177
E Baristo Rd
E Baristo Rd

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***Source**: Walker Consultants, 2023.*

The following table shows the inventory of current spaces per parking area.

Table 3-33: Employee, Airport Administration, and Tenant Parking Supply (Existing)

Lot	Number of Spaces
Tenant Manager (South of Terminal)	14
Tenant Manager (South of USO)	51
Airport Administration	17
Employee Parking	177
Employee Parking (Dirt Lot)	27
Employee Parking (Overflow)	45
Total	**331**

Source: *Walker Consultants, 2023.*

Current Employee Parking Demand

Walker received employee parking permit data from the airport's security manager's office. The following table summarizes the allocation of permits among the different employee lots.

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Table 3-34: Employee Parking Permit Allocation

Lot	Number of Spaces	Number of Permits Issued
Tenant Manager (South of Terminal)	14	81
Tenant Manager (South of USO)	51	
Airport Administration	17	
Employee Parking	177	1,074[1]
Employee Parking (Dirt Lot)	27	
Employee Parking (Overflow)	45	
Subtotal (Car Parking)	**331**	**1,155**
Motorcycle Parking	-	25
Total	**331**	**1,180**

Source: *PSP staff, 2023.*

Note: *[1] There are 901 permits are considered general employee parking, and 172 are considered temporary.*

As shown in the table, there are more permits (1,180) than there are employee parking spaces (331). It is typical to see an oversell of permits per lot as not all employees will be parked at the exact same time given that there are approximately three different shifts: an early morning shift, a midday shift, and an afternoon shift.

Since not all permits are in use at the same time, to better understand employee parking demand at the peak hour, Walker conducted parking occupancy counts between 10:00 am and 4:00 pm on Monday, May 22, 2023. These data serve as a baseline of current employee parking demand during the peak period of a typical weekday. At the peak hour, 53 percent of all employees, airport administration, and tenant parking spaces were occupied. However, discussions with the airport security manager's office revealed that some employees prefer to park off site in areas adjacent to the airport on the road right of way. We estimate that approximately up to 30 employee vehicles park off site during the peak hour, bringing the total employee occupancy to approximately 63 percent if those offsite vehicles were parked within the existing supply.

The following table shows the occupancy of each area during the peak hour of the survey day with the approximate off-site demand layered onto the total.

Table 3-35: Existing Employee Parking Demand

Lot	Number of Spaces	Peak Hour Occupancy
Tenant Manager (South of Terminal)	14	79%
Tenant Manager (South of USO)	51	29%
Airport Administration	17	53%
Employee Parking	177	70%
Employee Parking (Dirt Lot)	27	67%
Employee Parking (Overflow)	45	0%
Subtotal	*331*	*53%*
Total (with Offsite Demand Added)	**361**	**63%**

Source: *Walker Consultants, 2023.*

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As shown in the previous table, none of the employee parking areas reached capacity during the peak hour. However, given that May is not the busiest month of the year at PSP in terms of passenger activity, we assume a potential increase in employee presence during the peak hour of the busiest passenger months. Per the airport security manager's office, during the busiest part of the year (i.e., March), at the peak hour current employee parking demand nearly reaches capacity. As such, we assume a percentage increase of 40 percent to the observed current employee parking demand. The following table shows the current parking demand adjusted for peak activity.

Table 3-36: Adjusted Employee Parking Demand

Lot	Number of Spaces	Peak Hour Occupancy Adjusted for Seasonality
Tenant Manager (South of Terminal)	14	100%
Tenant Manager (South of USO)	51	41%
Airport Administration	17	74%
Employee Parking	177	98%
Employee Parking (Dirt Lot)	27	93%
Employee Parking (Overflow)	45	93%[1]
Total	**331**	**88%**

Source: *Walker Consultants, 2023.*

Note: *[1] This includes the projected offsite demand.*

When accounting for peak employee presence during the busier periods of the year, the projected existing employee parking demand is approximately 88 percent. This aligns with the airport security manager's observation that existing employee parking supplies are just sufficient in meeting today's demand.

Future Employee Parking Demand

This analysis assumes that the employee growth rate will resemble the enplanement growth rate for the planning horizon. As such, to calculate future employee parking demand, we take the observed parking demand and project growth based on the compound annual growth rate as presented in the forecast chapter. In all, there are three growth scenarios presented: a low, a base, and a high. In this analysis a more conservative approach was taken for projecting employee parking needs through the horizon year, as such the following requirements are shown under the high scenario.

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Table 3-37: Projected Future Employee Parking Need

Lot	Adjusted Peak Hour Demand (Existing)	PAL 1	PAL 2	PAL 3	PAL 4
Total Employee Parking	290	361	450	416	610
Supply	331	331	331	331	331
Surplus/Deficit	41	-30	-119	-193	-279

Source: *Walker Consultants, 2023.*

The results of the analysis shown in **Table 3-37** indicate that in PAL 1, PSP should have sufficient supply to accommodate employee parking demand under a high growth scenario. By 2032, there could be a slight deficit of employee spaces if no changes in supply are made, or parking demand grows unmitigated. The deficit could increase all the way through PAL 4.

However, the projections presented are based on high-level enplanement growth and have not considered specific plans by the Airport to add air carriers, additional gates, or outside services. Thus, employee parking demand projections as presented may not materialize, and in turn could result in adequate facilities beyond PAL 1. Before investing in new permanent parking infrastructure, Walker recommends that the Airport monitor employee parking demand as more employees are added to the parking system.

Also, there are ways to mitigate employee parking demand. This includes transportation demand management (TDM) programming such as carpools, vanpools, public transit passes/incentives, and increasing the cost of parking permits.

Rental Car Facility Requirements (CONRAC)

Walker conducted a site visit of the rental car facilities at PSP on May 22, 2023. Currently, there are eight on-airport rental car brands that utilize the rental parking areas and facilities. Existing facilities include:

- **Ready Parking Area** – Adjacent to the northern end of the terminal building and containing 332 spaces.
- **Return Parking Area** – Lanes wrap around the Ready Parking Area on the north and can be accessed via an entry on El Cielo Road, contains 150 spaces.
- **Additional Ready Parking Area** – A supplemental parking area is available to rental car companies next to the USO Building, with approximately 78 stacked spaces.
- **Quick Turn Around (QTA) Maintenance and Storage Facilities** – There are five distinct areas with QTA amenities (i.e., fueling, washing, vacuuming, light maintenance, etc.) and storage capacity along N Civic Drive.
- **Additional Vehicle Storage** – There is an extra vehicle storage lot behind one of the QTA areas along N Civic Drive with capacity for about 110 stacked spaces.
- **Alejo Lot** – There is an additional storage lot located on E Alejo Road that can accommodate hundreds of vehicles. However, in this lot there is a charge of $3 per day per car.
- **Economy Lot** – During peak seasons, the rental car companies often ask the Airport if they can use the Economy Lot to park their excess vehicles.

Figure 3-18 shows the locations of these rental car facilities, followed by images captured during the site visit.

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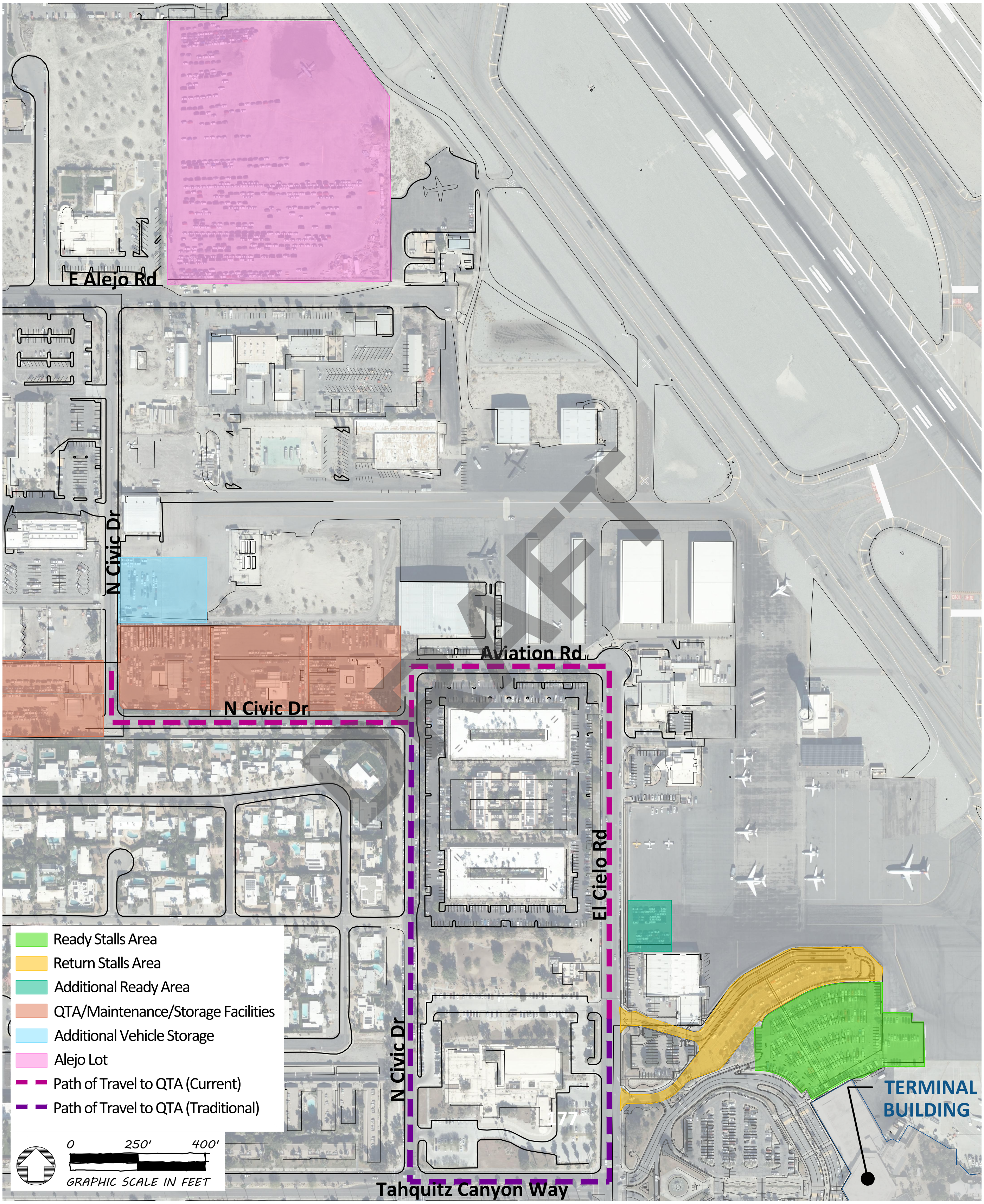
Figure 3-18: Existing Rental Car Lots and Facilities


E Alejo Rd
N Civic Dr
Aviation Rd
N Civic Dr
El Cielo Rd
N Civic Dr
Tahquitz Canyon Way
TERMINAL BUILDING
🟩 Ready Stalls Area
🟨 Return Stalls Area
🟩 Additional Ready Area
🟧 QTA/Maintenance/Storage Facilities
🟦 Additional Vehicle Storage
🟪 Alejo Lot
Path of Travel to QTA (Current)
Path of Travel to QTA (Traditional)
0
250'
400'
GRAPHIC SCALE IN FEET

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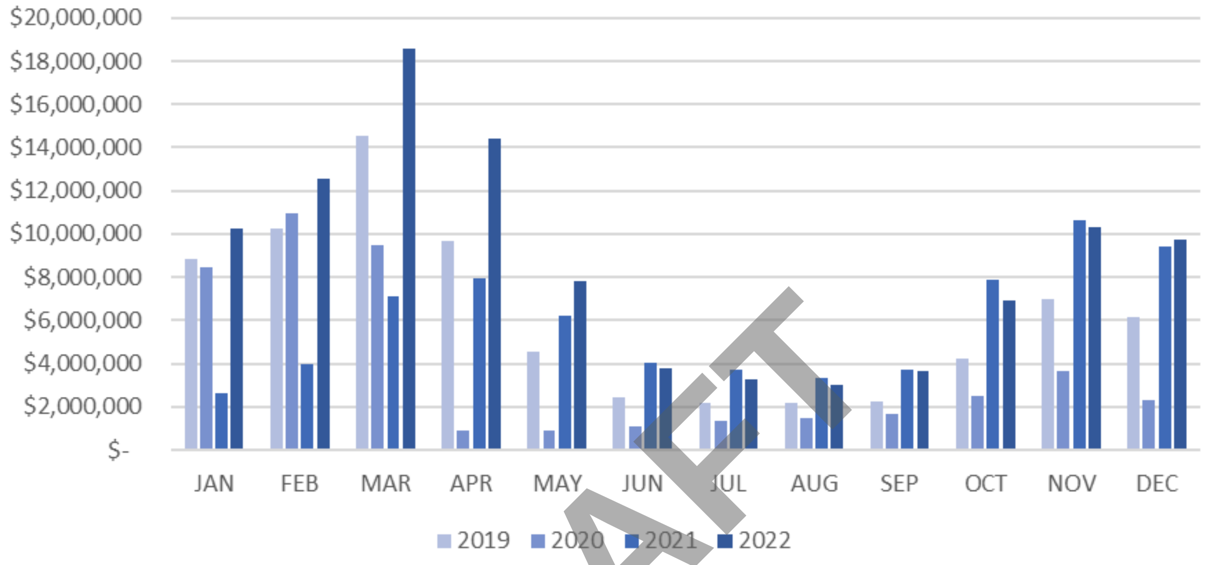
Rental Car Data Review and Summary

The revenue and transaction data from the Airport and rental car companies spanning the last several years was reviewed. To get a better understanding of rental car operations at PSP, the data was reviewed and summarized.

Figure 3-19: On-Airport Rental Car Gross Monthly Receipts (2019-2022)



Source: Airport, 2023.

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In terms of revenue, as shown in **Figure 3-19**, 2022 gross monthly receipts have exceeded 2019 (pre-pandemic) levels, indicating that rental car operations have recovered from the impact caused by the pandemic.

Facility Requirements Methodology

Approximately 352 days of hourly transaction data from June 1, 2022, through May 18, 2023, was received from the on-airport rental car companies currently serving PSP. The data were analyzed to determine the 15th busiest hour for pick-ups and 15th busiest hour for returns for each brand individually. The individual busiest hours were added together to represent the planning hour.

This resulted in 203 planning hour rentals and 197 planning hour returns. This represents a roughly eight percent decline in planning hour pick-ups and a 12 percent decline in planning hour returns compared to the 2019 facilities requirements analysis prepared by Ricondo. This is despite 2022 enplanements being 17 percent higher than 2019 enplanements, suggesting that rental car mode share has declined at PSP.

Standard utilization factors were used to determine facility requirements.

PALs were projected using the growth rate in enplanements as a proxy. The facility requirements based on the high growth scenario were projected and it was assumed that rental car needs grow at the same rate as enplanements, which has not been the case recently. The projections provided herein are likely the highest case scenario.

Existing Facilities

The existing rental car facility information is based on data contained in *PSP Rental Car Facility Requirements* (Ricondo, December 2019) as the layout and composition of rental car related facilities has not changed significantly between 2019 and 2023, which is shown in **Table 3-38**.

Table 3-38: Existing Facilities

Facility	Number
Customer Service Positions	25 (22 plus 3 supplemental)
Employee Parking	18 Spaces
Ready/Return Area	
Regular + Premium Ready Spaces	332 spaces
Return Spaces	150 spaces
Total Spaces	**482 spaces**
Service Areas	
Vehicle Fueling Positions	19 nozzles
Car Wash Bays	5 bays
Vehicle Maintenance Bays	11 bays
Admin Area	3,430 square feet
Overflow Vehicle Storage	1,813 spaces
Stacking/Staging Area	270 spaces

Source: Airport, 2023.

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Facility Requirement Analysis

Customer Service Positions

The number of customer service positions recommended for existing conditions is based on a calculation involving planning hour rentals, average transaction time, the percentage of renters who utilize the counter versus those who bypass the counter, and the application of a surge factor to reduce queues during the busiest hours.

The following assumptions are utilized in this analysis:

- Average counter transaction time: five minutes per transaction (12 per hour per position) - reduced from six minutes in the 2019 Ricondo analysis due to continued improvements in technology and processing speeds.
- Planning Hour Rentals: 203 – 15th highest hour for each rental car conglomerate summed together.
- Percentage of customers who utilize the counter for vehicle check out: 75 percent.
- Surge factor: 30 percent.

The calculation of the existing number of customer service positions is shown in **Table 3-39**.

Table 3-39: Customer Service Positions (Existing)

Existing Conditions	
Planning Hour Check-Out Transactions	203
x 75% use counter	152
/12 transaction per counter per hour	13 positions
X 30% surge factor	17 positions needed

Source: Walker Consultants, 2023.

The future requirement for customer service positions is based on the high growth scenario for commercial enplanements in PSP's aviation activity forecast. The high scenario includes a 4.5 percent compound annual growth rate from 2022-2032 and a 3.1 percent compound annual growth rate from 2032-2042. **Table 3-40** shows the forecasted number of customer services positions that will be needed in PALs one through four.

Table 3-40: Future Customer Service Positions Need

Existing	2032	2042
17 positions	26 positions	35 positions

Source: Walker Consultants, 2023.

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Ready / Return Area Sizing

The existing ready areas for rental car check-outs can hold 332 vehicles, and the existing return areas can hold 150 vehicles. The rental car companies have indicated a desire to have 2.0 planning hours of capacity in the ready area, and 1.5 planning hours of capacity in the return area.
Based on the existing planning hour of 203 planning hour rentals and 197 planning hour returns, there is an existing desire for 406 ready rental spaces and 296 return spaces.

Thus, both the ready are and return area are deficient compared to rental agencies desires for existing conditions.

Table 3-41 summarizes future ready/return area needs based on the high growth scenario for commercial enplanements discussed in the previous section.

Table 3-41: Future Customer Service Positions Need

	Existing	2032	2042
Ready Spaces Needed	406 spaces	630 spaces	854 spaces
Return Spaces Needed	296 spaces	459 spaces	623 spaces

Source: Walker Consultants, 2023.

Table 3-42 includes the approximate amount of space needed per ready space and return space.

Table 3-42: Ready / Return Space Area Needs

Ready Space Requirements	Return Space Requirements
425 square feet per space, including generous dimensions and drive aisles (103 vehicles per acre). For comparison, an efficient rectangular surface parking lot needs 325-350 square feet per space.	**211 square feet per space (206 vehicles per acre).** Return areas feature stacked parking without drive aisles.
Space Needed 2032: 6.14 acres Space Needed 2042: 8.33 acres	Space Needed 2032: 2.22 acres Space Needed 2042: 3.02 acres

Source: Walker Consultants, 2023.

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Fueling Positions

Fueling positions in the quick turnaround area are where vehicles are re-fueled, vacuumed, and inspected and where they receive minor touchups as needed. The standard fueling position is similar to fuel pumps at gas stations, with each position having two fuel nozzles, one on either side, servicing two vehicles simultaneously. PSP currently has 19 fueling positions, with the ability to service 38 vehicles.

The following assumptions were utilized to determine existing and future fueling position needs:

- 197 existing planning hour returns – desire is to be able to turn around planning hour returns in one hour.
- 25 percent of vehicles returned full, do not need to access fueling position.
- Each nozzle can service five vehicles per hour (12 minutes per vehicle); each fueling position can service 10 vehicles per hour (5x2).

As in previous sections, this analysis assumes that the growth in rental car needs, and hence fueling position needs is equal to the projected growth (rate) of enplanements at PSP.

Table 3-43: Fueling Positions

	Existing	2032	2042
Fueling Positions	19 (38 nozzles)	23 (46 nozzles)	31 (62 nozzles)

Source: Walker Consultants, 2023.

Wash Bays

Wash bays are where vehicles are quickly washed in the QTA, before being returned to the ready area. The current system at PSP has a throughput of 1.5 minutes per vehicle per bay, which is shown in **Table 3-44**.

The following assumptions were utilized to determine existing and future wash bay position needs.

- 197 Existing planning hour returns – desire is to be able to turn around planning hour returns in one hour.
- Each wash bay can accommodate 40 vehicles per hour (1.5 minutes per vehicle).
- Current wash bay system is maintained and repaired as needs dictate.

Table 3-44: Wash Bays

	Existing	2032	2042
Wash Bays	5	8	11

***Source:** Walker Consultants, 2023.*

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There has been increased prevalence of automated car wash tunnel systems in the external car wash industry. These automated tunnel systems can accommodate 75-150 vehicles per hour depending on the length of the tunnel.

Stacking / Staging Area Analysis

Shown in **Table 3-45** the stacking/staging areas are where vehicles are held prior to and after QTA functions such as washing, fueling and minor maintenance. The industry norm for stacking/staging area, per PSP's rental car vendors is 1.6 times the number of planning hour returns.

Table 3-45: Stacking / Staging Area Analysis

	Existing	2032	2042
Stacking/Staging Area	315	490	662

***Source:** Walker Consultants, 2023.*

Other Facility Requirements

Existing requirements for other rental car related facilities, including administrative areas, employee parking needs, light maintenance bays and vehicle storage are assumed to be the same as determined in the prior 2019 analysis. This analysis has updated the analysis for the 2032 and 2042 analysis years based on the projected growth in enplanements at PSP, which is shown in **Table 3-46**.

The table below summarizes the existing and future facility requirements and area needed to accommodate the requirements. It must be noted that these projections assume no change in future mode share.

Table 3-46: Future Rental Car Facility Requirements

	Existing			PAL 2			PAL 4		
	Quantity	SF	Total SF	Quantity	SF	Total SF	Quantity	SF	Total SF
Customer Service Area									
Counter Positions	25	290	7,250	26	290	7,540	35	290	10,150
Circulation	30%		2,175	30%		2,262	30%		3,045
Ready/Return/Storage									
Ready Spaces	332	425	141,100	630	425	267,750	854	425	362,950
Circulation	25%		35,275	25%		66,938	25%		90,738
Return Spaces	150	211	31,650	459	211	96,849	623	211	131,453
Circulation	25%		7,913	25%		24,212	25%		32,863
Storage Spaces	1,813	189	342,657	1,634	189	308,826	2216	189	418,824
Circulation	25%		85,664	25%		77,207	25%		104,706
Exit Booths	8	500	4,000	10	500	5,000	12	500	6,000
Circulation	25%		1,200	25%		1,500	25%		1,800
QTA/Service Site									
Fueling Positions	19	360	6,840	19	360	6,840	31	360	11,160
Wash Bays	5	1,650	8,250	8	1,650	13,200	11	1,650	18,150
Stacking/Staging Spaces	270	200	54,000	490	200	98,000	662	200	132,400
Maintenance Bays	11	720	7,920	22	720	15,840	26	720	18,720
Admin Area	3,430		3,430	5,900		5,900	6,600		6,600
Employee Parking	18	250	4,500	83	250	20,750	92	250	23,000
Circulation	25%		21,235	25%		40,133	25%		52,508
Small Market Entrant	5%	of area	38,253			53,496			71,253
Total Requirement (Square Feet)			**803,312**			**1,112,243**			**1,496,320**
Total Requirement (Acres)			**18**			**26**			**34**

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Source: *Walker Consultants, 2023.*

Additional Considerations

Electric Vehicle (EV) Chargers

Beginning in 2035, the State of California will require that all new cars sold in the state be zero-emission vehicles (ZEV) which includes battery electric vehicles, plug-in hybrid vehicles, and fuel cell electric vehicles. With increased sales of electric vehicles, California is leading the country with respect to the EV market. Per the state, as of December 2022, 18.8 percent of new California cars sold were ZEVs.[2] Additionally, officials at the National EV Charging Summit and Expo held in Las Vegas in March 2023 stated that California is seven years ahead of the rest of the country in EV adoption and ancillary infrastructure and policies. As the electric vehicle market continues to grow, especially in California, and as we look toward a 2042 planning horizon, for PSP the importance of having infrastructure to support electric vehicles will only increase over time. Walker's national projections for EVs on the road are shown in **Figure 3-20**.

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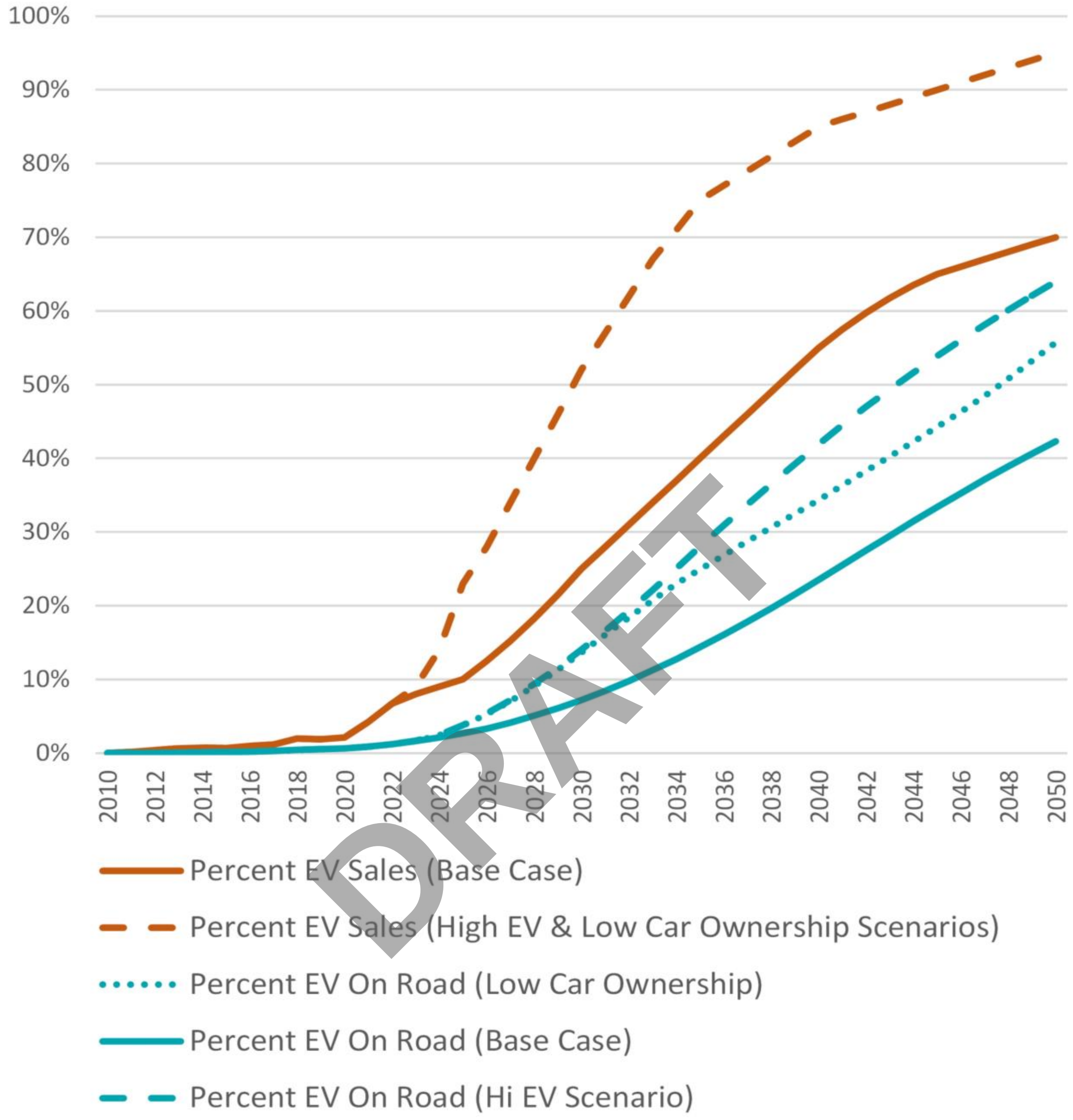
[2] https://www.gov.ca.gov/2023/01/20/california-zev-sales-near-19-of-all-new-car-sales-in-2022/#:~:text=State%20Actions%20to%20Support%20the%20ZEV%20Market&text=The%20success%20of%20the%20state's,nation%20in%20ZEV%20manufacturing%20jobs.

Figure 3-20: Walker 2023 EV Projection Scenarios (National)



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Source: *Walker Consultants, 2023.*

As shown in the figure, by 2042, it is projected that EVs could account for anywhere between 25 percent to 45 percent of vehicles on the road nationally. Still, it is important to remain flexible when planning facilities for a 20-year horizon as these technologies are ever-evolving.

EV Public Parking

PSP currently has six charging parking spaces in its public parking facilities. Two are located in the B section of the Main Lot, and the other four are located in the C section of the Main Lot. The chargers and adjoining parking stalls account for less than one percent of all public parking spaces at PSP.

Regarding the expansion of electric vehicle charging spaces for customers, PSP already has plans to add 80 level two charging spaces in fiscal year 2024 to be added to a new economy parking lot. The addition of these new chargers would increase the number of EV capable spaces from six to 46, and account for 2.7 percent of all stalls in the public parking system at PSP. Recent research indicates that currently a parking system could apportion between five to 10 percent of the overall parking supply as EV spaces to accommodate the EVs that are on the road today, of course local conditions will vary. Nonetheless, it is recommended that the Airport continue to monitor demand for electric vehicles at PSP and provide spaces accordingly.

One challenge that the Airport may need to address as more EVs park at the Airport in the future is how to ensure that charging stations are being used efficiently. For example, today the chargers operate on a first-come first-served basis which can lead to inefficiencies in the sharing of chargers. For instance, if all six of the current chargers are occupied when another EV driver pulls into the lot, under the current model that last EV would not be able to charge until one of the other spaces is vacated. At an Airport, it may take several days before an occupant leaves an EV parking space. It is a challenge that all airports face today, but a potential solution could come by way of a valet system where once cars are charged to max capacity, they can be swapped to non-EV stalls.

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EV Employee Parking

Currently, no chargers were observed in any of the employee, the Airport administration, or tenant parking lots. However, PSP is planning on installing 10 electric vehicle charging spaces to the employee lot. The addition of the 10 EV spaces would account for 3.5 percent all current employee, administration, and tenant parking spaces. As with the public parking areas, it is recommended that the Airport continue to monitor demand and provide spaces accordingly.

EV Rental Cars

Rental car companies at PSP today, already maintain electric vehicle inventories and have them available for use. However, according to one operator, electric vehicles are currently charged at stations that are located as far as 15 minutes away from the terminal, at least with respect to fast charging which for rental car operations is important for quickly turning vehicles around. With the projected growth of rental car transactions over the 20-year planning horizon as well as the mandate from the state that all new vehicles be ZEVs, electric vehicle infrastructure will be important for any future facilities.

The key consideration in planning for electric vehicle infrastructure for a CONRAC is charging (i.e., fueling). While the quickest way to charge a vehicle is through DC fast charging, these are also the most expensive chargers and require high-voltage power supply and often necessitate significant electrical infrastructure upgrades, including transformers and distribution panels. On the other hand, level two chargers are much more cost-effective and can be installed without significant modification to the electrical infrastructure.

Given the distance between the terminal and current charging locations, for future needs, chargers would likely need to be located closer, especially as rental electric vehicle inventories increase. Proximity to the terminal and consideration for the types of chargers and the amounts needed for maintaining an appropriate level of service will be important.

FACILITY REQUIREMENTS SUMMARY

This chapter quantified operational deficits in the terminal area and terminal building in anticipating of developing initial planning concepts for terminal and concourse renovation and expansion. The initial concepts will not only address space inadequacies and adjacencies but will also address movement paths and passenger circulation throughout the terminal and concourse.

As documented in this chapter, there is a clear need for expansion of the terminal at PSP, as the current total terminal area of approximately 300,000 square feet is much less than the 435,000 square feet that is needed for a functional terminal today. By the time PAL 1 levels of almost two million annual enplanements (4 million annual passengers) are realized, the terminal will not be providing an acceptable level of service to PSP travelers. The following chapters will explore options for meeting the near-term need for additional space in the context of long-term projected growth and passenger demand.

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Chapter 4 – Part I Initial Terminal Area Alternatives

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INTRODUCTION

The alternative planning process for the Palm Springs Airport (PSP or the Airport) Master Plan was designed to evaluate the information gathered to date including inventory, forecasts, and facility requirements for use in developing initial high-level alternatives. This chapter introduces those high-level alternative concepts developed with the intent to meet future needs detailed in the previous chapter, **Terminal Area Facility Requirements**. The high-level development concepts explored in this chapter will be narrowed and refined into more detailed alternatives in the next phase of the process.

The following section outlines the planning assumptions associated with the alternative concepts and the goals that these alternatives are designed to achieve. The Assumptions and Goals section is followed by a description of terminal area opportunities and constraints used as a foundation for initial high-level alternative development. Next follows a summary of each alternative concept with its relative advantages and disadvantages. Preliminary screening criteria incorporating City of Palm Springs and Airport sustainability focus categories is then presented to compare terminal alternative concepts.

ASSUMPTIONS AND GOALS

The following assumptions and goals were established to help guide the development and analysis of a range of alternatives designed to accommodate current and future demand at the Airport.

Assumption One: ***Recommended improvements must comply with local, state, and federal regulations.***

The Airport will be developed and operated in a manner that is consistent with local ordinances and codes, federal and state statutes, federal grant assurances, and Federal Aviation Administration (FAA) regulations.

Assumption Two: ***The terminal area layout must accommodate the critical aircraft for each facility.***

The size and type of aircraft that use the Airport, as well as the resulting setback and safety criteria, are the basis for the layout of facilities. Currently, PSP is primarily served by a narrowbody aircraft fleet (ex. Boeing 737 and Airbus A320 series aircraft), and this is anticipated to continue throughout the planning horizon. As a result, the terminal area is planned to meet design standards for narrowbody aircraft in Aircraft Approach Category D and Airplane Design Group (ADG) III. However, flexibility of the terminal area to accommodate larger, widebody aircraft is also considered and incorporated into the alternatives. This is considered specifically for areas anticipated to accommodate international flights, including a potential Federal Inspection Station (FIS) facility.

Assumption Three: ***Limited developable space necessitates efficient and targeted development.***

Since the Airport, and the airport terminal area, is constrained, efficient use of developable space is critical.

Assumption Four: ***For planning purposes, the terminal development envelope for buildings and parked aircraft is located a minimum of 800 feet from the Runway 13R/31L centerline to provide adequate airspace and wingtip clearance.***

The 800-foot distance delineates a boundary where objects approximately 43 feet in height can be located without penetrating Code of Federal Regulations (CFR) Part 77 "Imaginary Surfaces" applicable to runways with a precision approach. While PSP does not currently have a precision approach, previous Master Plan studies have planned for the implementation of this approach type.

Aircraft expected to serve PSP on a regular basis have tail heights approaching 42 feet above ground. The 800-foot line provides a development envelope that avoids tail penetrations of parked aircraft to Part 77 airspace surfaces by existing and future critical aircraft. While future terminal concourse elevations are not yet defined in the planning process, the 800-foot building setback line provides a reasonable building restriction line for concourse expansion. The 800-foot setback line also preserves adequate space for PSP to accommodate an apron taxilane parallel to the full-length taxiway of Runway 13R/31L, similar to what exists east of the Sonny Bono Concourse today.

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Assumption Five: ***Consider seasonality and peaking characteristics.***

The Airport experiences varying levels of activity during different seasons of the year. Peaking characteristics are considered for evaluation of development alternatives.

Assumption Six: ***The original Wexler terminal building will be protected and opportunities to feature this unique and historic component of the terminal complex will be pursued to the extent practical.***

The original Wexler terminal building was recently listed in the National Register of Historic Places. Terminal development alternatives will strive to enhance the historic features of this building while cost-effectively meeting facility needs.

Assumption Seven: ***Property in the vicinity of PSP that could support future development may be considered for concept development purposes.***

There is limited developable space at PSP. This planning effort will consider expansion potential for future Airport development, including property acquisition.

Goals for Development

Accompanying these assumptions are several goals, which have been established for the purposes of directing planning efforts and establishing continuity for future airport development. These goals consider several categorical considerations related to the Airport's short-term and long-term needs.

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Airport Development Goals

- Enhance the PSP passenger experience.
    - Use of outdoor space.
    - Levels of passenger service and convenience.
    - "Front Door" Access.
    - Outdoor mountain views.
    - Retain the character of the original terminal building designed by Donald Wexler.
- Provide future facility plans that are flexible, cost-effective, financially feasible, and can be implemented in a phased approach.
- Maximize the use of developable space.
- Be responsive to stakeholder needs.
- Enhance revenue generation opportunities.
- Include plans for an FIS facility and provide gates capable of accommodating international arriving passengers.
- Consider future technological changes.
- Incorporate sustainability vision statement and focus categories.

In June of 2023, PSP selected the following Sustainability Vision Statement:

> *It is PSP's commitment to foster a sustainable and resilient future for our community through socially responsible, environmentally sustainable, and economically valuable means.*

Sustainability focus categories selected by PSP include:

- Airport Finance.
- Land Use and Transportation.
- Resource Management.
- Energy.
- Water.
- Waste.
- Stakeholder Relations.
- Resilience.

Recommendations for incorporating equity and sustainability in the design of the planned terminal area improvements are provided in the final section of this chapter.

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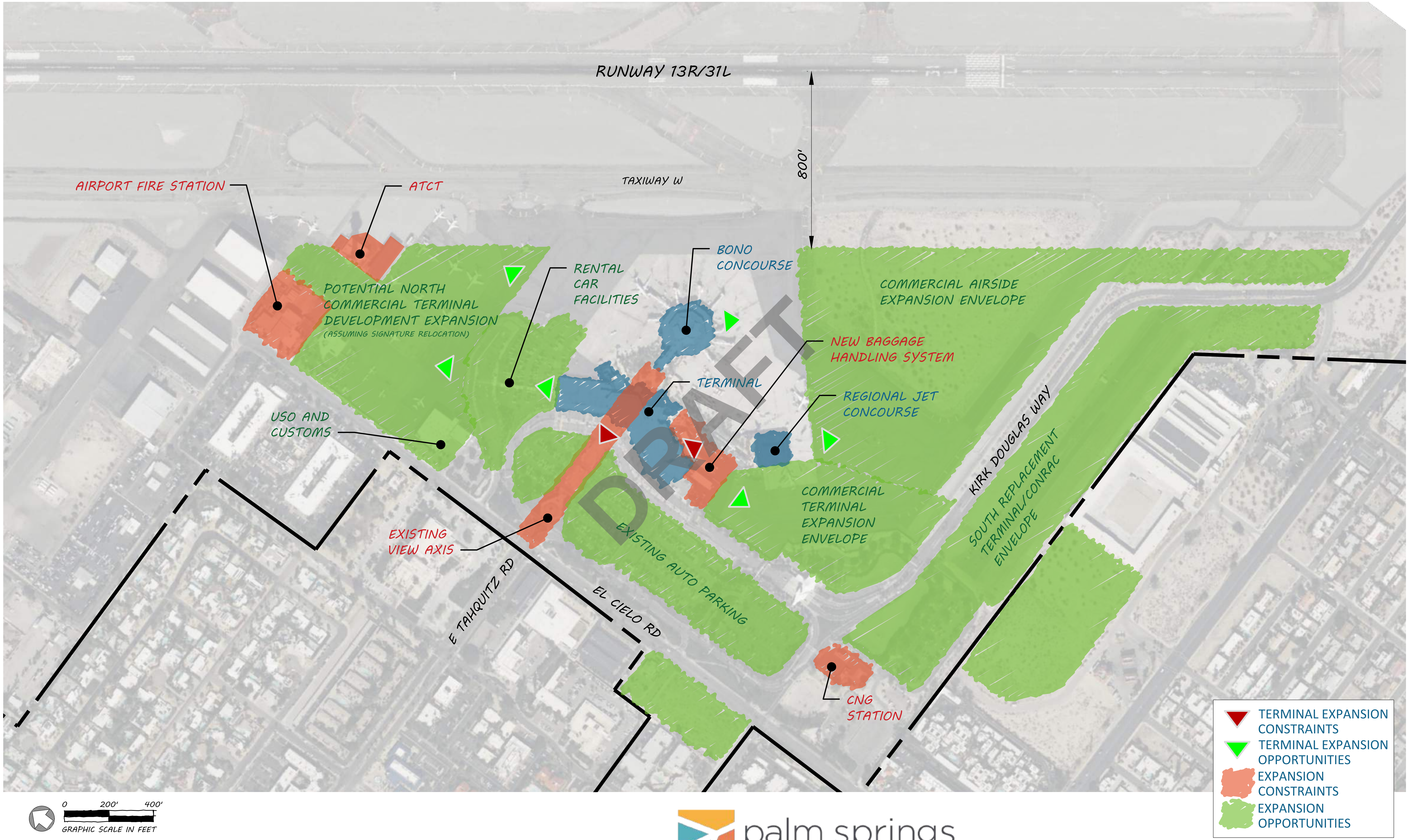
OPPORTUNITIES AND CONSTRAINTS

Understanding opportunities and constraints is critical to developing viable alternatives. The opportunities and constraints map, **Figure 4-1**, depicts potential areas that support additional facility expansion or reconfiguration in green. The red areas are constraints that will hinder or potentially prevent future facility development.

Major terminal area constraints include Runway 13R/31L and taxiway infrastructure to the east, the airport traffic control tower (ATCT) and airport fire station to the north, El Cielo Road to the west, and existing roadway and building infrastructure to the south.

Figure 4-1: Opportunities and Constraints


RUNWAY 13R/31L
800'
TAXIWAY W
AIRPORT FIRE STATION
ATCT
POTENTIAL NORTH COMMERCIAL TERMINAL DEVELOPMENT EXPANSION
(ASSUMING SIGNATURE RELOCATION)
RENTAL CAR FACILITIES
BONO CONCOURSE
COMMERCIAL AIRSIDE EXPANSION ENVELOPE
NEW BAGGAGE HANDLING SYSTEM
TERMINAL
REGIONAL JET CONCOURSE
USO AND CUSTOMS
KIRK DOUGLAS WAY
SOUTH REPLACEMENT TERMINAL/CONRAC ENVELOPE
COMMERCIAL TERMINAL EXPANSION ENVELOPE
EXISTING VIEW AXIS
EXISTING AUTO PARKING
E TAHQUITZ RD
EL CIELO RD
CNG STATION
0
200'
400'
GRAPHIC SCALE IN FEET
▼ TERMINAL EXPANSION CONSTRAINTS
▼ TERMINAL EXPANSION OPPORTUNITIES
🟥 EXPANSION CONSTRAINTS
🟩 EXPANSION OPPORTUNITIES

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INITIAL TERMINAL AREA ALTERNATIVE CONCEPTS

The PSP terminal, concourse, and Consolidated Rent-A-Car (CONRAC) layout alternatives are the result of an initial effort to establish master plan concepts capable of accommodating 30-32 aircraft gates. This initial work was completed prior to the development of a functional terminal area program based on forecasted future demand. The concepts were used to solicit feedback from the key leadership group at PSP through an in-person visioning session and a follow-up virtual session, resulting in the developed alternatives.

The initial high-level Master Plan terminal alternatives were categorized into three approaches:

- **Approach 1: Maximum Reuse –** Maintaining operations and access at the current terminal location while maximizing reuse of the existing headhouse and expanding concourse facilities.
- **Approach 2: Partial Reuse –** Maintaining operations and access at the current terminal location, along with reuse of the existing headhouse facilities, while providing all new concourse facilities.
- **Approach 3: Southern Development –** Relocating the terminal operations and concourses to the southern end of the airport property with the headhouse fronting Kirk Douglas Way.

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Approach 1: Maximum Reuse

Approach 2: Partial Reuse

Approach 3: Southern Development

For each approach, the CONRAC facility was located to best support passenger needs for ease of accessibility. For Approaches 1 and 2, the CONRAC is located to the north, connecting directly to the baggage claim hall. For Approach 3, where the headhouse is located on Kirk Douglas Way, the CONRAC is located accessing Kirk Douglas Way, either directly to the south or to the southwest.

From the initial approach high-level alternatives, the Master Plan team prioritized the following:

1. Maintain primary access from Tahquitz Way, maintaining the current “Front Door” and connection to downtown Palm Springs.
2. Emphasize the charm and ease of use of the current terminal.
3. Maintain the original Donald Wexler design of the terminal building headhouse.
4. Minimize walking distances.
5. Prefer a single-level terminal roadway.
6. Access majority of aircraft via a boarding bridge.

7. Maintain current level of service and adjacency of CONRAC to terminal.
8. Maintain an outdoor courtyard space on the secure side of the terminal.

Terminal Area Alternative 1A

Alternative 1A, illustrated in **Figure 4-2**, applies the maximum reuse approach. The headhouse, central courtyard, and Bono concourse are maintained. The alternative includes a new double loaded concourse pier at the south, extending the Part 77 limits for an aircraft to be gated at the east end. The southern gates are served by a dual ADG-III taxilane to accommodate most of the terminal gates, while the remaining northern gates are accessed via a single ADG-III taxilane. The new northern concourse is laid out in a linear arrangement and has direct taxiway access from the gates.

Primary access remains at Tahquitz and El Cielo, with secondary access from the Coachella Valley via Ramon Road. The roadway network would be maintained as a single-level roadway system, expanding the curbsides and terminal to the south and north. Along the curbside, the ticketing and baggage claim buildings are expanded to the south and north, respectively. This accommodates growth in the ticketing, security, and baggage claim programs. Ticketing would shift south, thereby allowing for the Security Screening Check Point (SSCP) to also expand southwards.

Post security, travelers would enter an expanded courtyard providing central access to three concourses: a new south concourse, the existing Bono Concourse, and a new north concourse.

The new southern concourse would accommodate 19 narrowbody gates serving domestic or pre-cleared arriving operations. The concourse would be dual-level, accommodating the expanded baggage handling system at the apron level and loading by jet bridge at the second level. A dual-level concourse could also accommodate ramp-loaded aircraft operations.

The existing Bono Concourse remains and would not require modifications in building geometry for this concept. It was noted in early visioning that the indoor/outdoor boundary between the holdroom and upper-level courtyard at this concourse leads to overcrowding at peak operations and may require renovations to increase customer level of service.

The new north concourse can accommodate up to eight narrowbody gates. Four gates are Multiple Aircraft Ramp System (MARS) gates for the FIS, and they could be swapped out for widebody aircraft at a 2:1 ratio. Given the north concourse's proximity to baggage claim and the arrivals curb, this concourse would also have a sterile corridor and FIS allowing for arriving international flight operations.

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Potential advantages of Alternative 1A

- Reduces cost by maintaining major components.
- Maintains existing character of Palm Springs Airport by preserving major elements.
- Maintains and expands outdoor space post security.
- Locates CONRAC near the baggage claim.
- Locates FIS near the baggage claim.
- Eases construction phasing with multiple and entirely separate concourses.

Potential disadvantages of Alternative 1A

- Causes disruption from phasing and renovations.
- Introduces a long walking distance from the south concourse to the baggage claim.
- Requires renovation of existing spaces and facilities.

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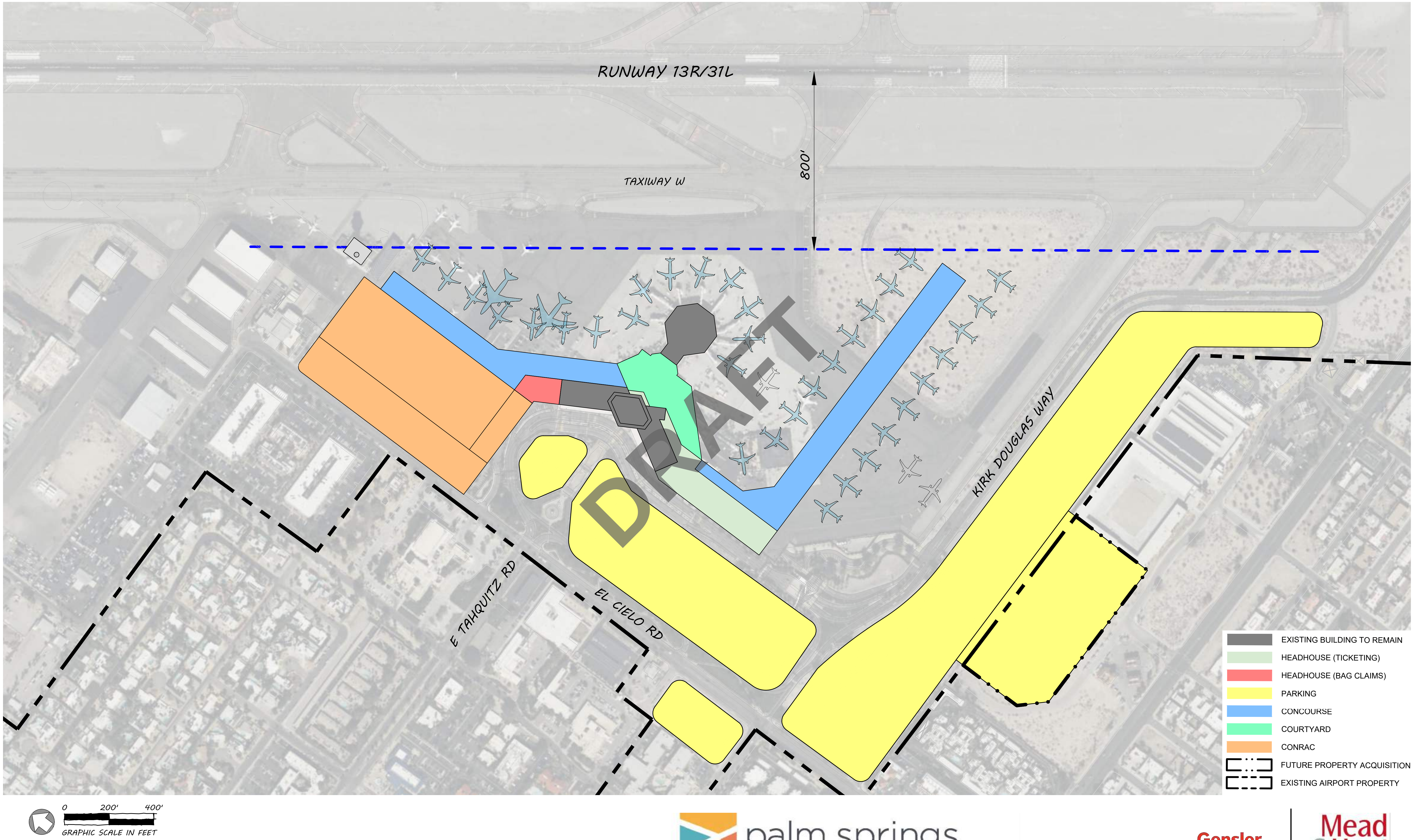
Figure 4-2: Alternative 1A


RUNWAY 13R/31L
800'
TAXIWAY W
DRAFT
KIRK DOUGLAS WAY
E TAHQUITZ RD
EL CIELO RD
EXISTING BUILDING TO REMAIN
HEADHOUSE (TICKETING)
HEADHOUSE (BAG CLAIMS)
PARKING
CONCOURSE
COURTYARD
CONRAC
FUTURE PROPERTY ACQUISITION
EXISTING AIRPORT PROPERTY
0
200'
400'
GRAPHIC SCALE IN FEET

Terminal Area Alternative 1B

Alternative 1B, illustrated in **Figure 4-3**, maximizes the reuse of existing facilities from Alternative 1A with a new, linear, double-loaded concourse pier extending from the southeast corner of the Bono concourse. The eastern gates have direct taxiway access, while the gates on the west are served by a dual ADG-III taxilane. At the west there are two concourses that extend north and south of the courtyard. Primary access to the terminal remains at Tahquitz and El Cielo with secondary access from Ramon. Like Alternative 1A, Alternative 1B maintains the single-level roadway system, expanding the curbsides and terminal to the south and north. The ticketing and baggage claim buildings are also expanded to the south and north like Alternative 1A.

Alternative 1B similarly has three concourses: a new south concourse, the existing Bono Concourse, and a new north concourse. The primary function of the new southern concourse remains largely unchanged from Alternative 1A, a dual-level concourse accommodating eight narrowbody gates that serve domestic or pre-cleared arriving operations.

The existing Bono concourse and concourse expansion would be accessed from the current location of escalators and elevators. Additional escalators and elevators would need to be added to accommodate the increased foot traffic from the concourse expansion. From the southeast corner of the Bono concourse, a new linear concourse is extended southwest parallel to the runway, adding an additional 14 narrowbody gates. This would require heavy renovation of the Bono concourse in planning and the façade to accommodate the new concourse.

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The new north concourse can accommodate up to seven narrowbody gates, of which four are MARS gates and can be swapped out for widebody aircraft at a 2:1 ratio for FIS purposes. Given the proximity to baggage claim and the arrivals curb, this concourse would also have a sterile corridor and FIS allowing for arriving international flight operations.

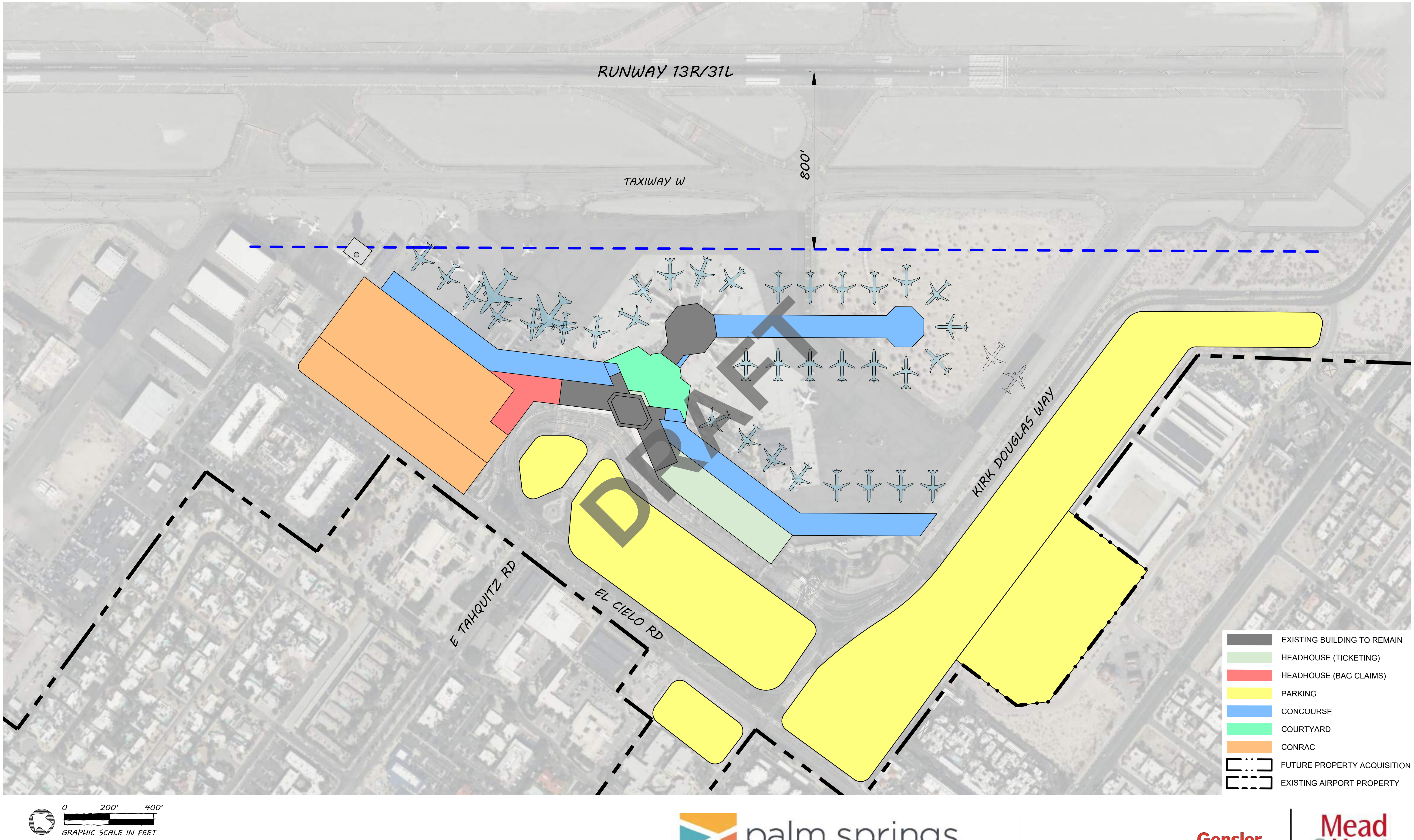
Potential advantages of Alternative 1B

- Maintains existing character of Palm Springs Airport by preserving major elements.
- Headhouse is centrally located, distributing walking distances among gates.
- Maintains existing outdoor space post security.
- Locates CONRAC near the baggage claim.
- Locates FIS near the baggage claim.
- Allows for ease of construction phasing with multiple and entirely separate concourses.

Potential disadvantages of Alternative 1B

- Complex renovations of existing facilities that may impact cost and negatively impact passenger experience.
- Does not expand outdoor space post security.

Figure 4-3: Alternative 1B


RUNWAY 13R/31L
TAXIWAY W
800'
DRAFT
KIRK DOUGLAS WAY
E TAHQUITZ RD
EL CIELO RD
EXISTING BUILDING TO REMAIN
HEADHOUSE (TICKETING)
HEADHOUSE (BAG CLAIMS)
PARKING
CONCOURSE
COURTYARD
CONRAC
FUTURE PROPERTY ACQUISITION
EXISTING AIRPORT PROPERTY
0
200'
400'
GRAPHIC SCALE IN FEET

Terminal Area Alternative 2

Alternative 2, illustrated in **Figure 4-4**, applies the minimum reuse approach; only the headhouse and portions of the central courtyard remain. Overall, the layout is a linear arrangement with most gates served by a new concourse parallel with the runway. This concourse location is along the eastern edge, with parked aircraft tails abutting the Part 77 limit line. Gates on the eastern side have direct taxiway access. The gates on the west can be accessed by a dual ADG-III taxilane that also serves the western concourse pier extension.

Primary access into the terminal remains at Tahquitz and El Cielo with secondary access from Ramon. The single-level roadway system is also preserved, expanding the curbsides and terminal to the south and north. Along the curbside, the ticketing and baggage claim buildings are expanded to the south and north, respectively, accommodating the growth in ticketing, security, and baggage claim programs. Ticketing would shift south, allowing for the SSCP to expand toward the south from its current location.

Post security, travelers would enter an expanded courtyard providing central access to a new eastern and southern concourse.

The new eastern concourse is organized in a linear arrangement parallel to the runways and would gate up to 27 narrowbody aircraft. Four gates could be swapped out for up to two widebody aircraft at a 2:1 ratio. The concourse is envisioned as dual-level, accommodating the expanded baggage handling system at the apron level, and loading by jet bridge at the second level. There is an opportunity for this concourse to also accommodate ramp-loaded aircraft operations, which would inform where the final vertical circulation core would be located. At the northern end of the concourse, given the proximity to baggage claim and the arrivals curb, there would be a sterile corridor and FIS allowing for arriving international flight operations.

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The southern concourse is designed to accommodate up to five narrowbody aircraft and would need to be dual-level for some or all portions to accommodate the baggage handling system and connection. This concourse would service domestic or pre-cleared arriving international operations.

Potential advantages of Alternative 2

- Maximizes aircraft efficiency with minimal taxi distances to taxiway/runways.
- Expands central courtyard.
- Provides flexibility to accommodate larger number of international arriving gates.
- Centrally locates headhouse, distributing walking distances among gates.
- Maintains and expands outdoor space post security.
- Locates CONRAC near the baggage claim.

Potential disadvantages of Alternative 2

- Introduces multiple large phases with higher cost impacts that may cause disruptions to passenger experience and operations.
- Complicates construction phasing compared to the two previous alternatives.

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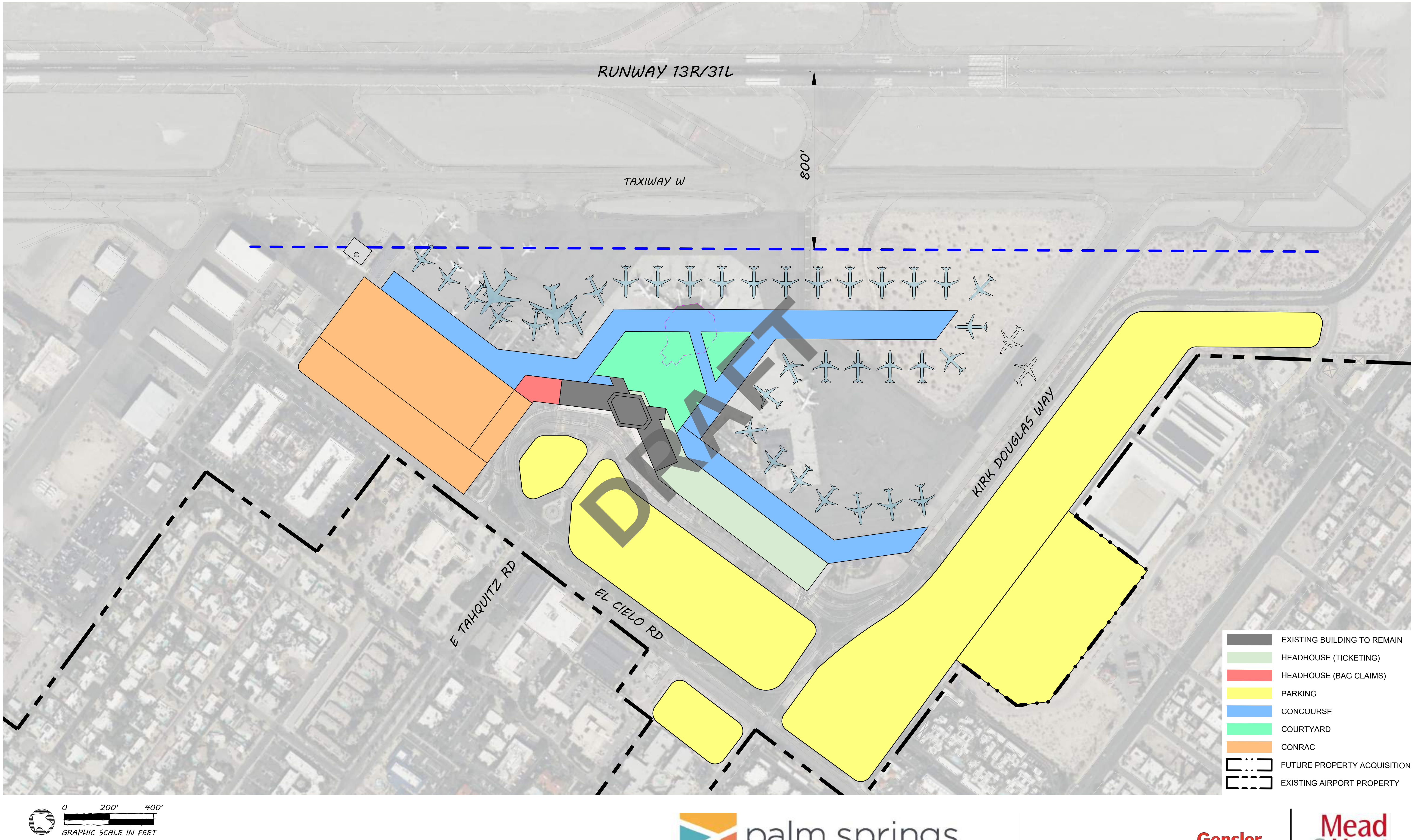
Figure 4-4: Alternative 2


RUNWAY 13R/31L
TAXIWAY W
800'
KIRK DOUGLAS WAY
E TAHQUITZ RD
EL CIELO RD
DRAFT
EXISTING BUILDING TO REMAIN
HEADHOUSE (TICKETING)
HEADHOUSE (BAG CLAIMS)
PARKING
CONCOURSE
COURTYARD
CONRAC
FUTURE PROPERTY ACQUISITION
EXISTING AIRPORT PROPERTY
0
200'
400'
GRAPHIC SCALE IN FEET

Terminal Area Alternative 3

Alternative 3, illustrated in **Figure 4-5**, relocates all airport terminal and concourse operations to the southern site along Kirk Douglas Way. Given the historic nature of the Wexler terminal building it would be the only structure to remain, and its function would be determined in the future. The new terminal would span east and west, with three concourse piers extending in a north and south alignment. The western concourse pier extension would be limited in length by the location of the Wexler terminal building, and the central and west concourse piers extend to the limits of the CFR Part 77 limit line. Between the western and central concourse piers is a dual ADG-III taxilane or single ADG-V, since both are capable of serving most gates and the two MARs positions. With the layout and site envelope, a single ADG-III taxilane serves the central and east concourse piers.

Primary access to the terminal will remain from Tahquitz and El Cielo; however, both will require major reworks of the landside roadway system, pedestrian access, and surface parking. On this alternative, the CONRAC is located on the south site, with a few options in placement that will be driven by both landside access and the forecasted area demand.

The new terminal would have the departures curb and ticketing at the east end, and the arrivals curb and baggage claim at the west end. The SSCP is located at the center of the terminal, between ticketing and baggage. There is an opportunity at this point for passengers to ascend to a second level, allowing for space at the apron level for the baggage handling system. This would be developed in the next stage of concept refinement.

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Post security passengers can remain in the terminal building or enter a central open-air courtyard. This layout also shows covered portions of the terminal that could be opened to the courtyard while providing coverage from sun or rain, or it could be fully enclosed and conditioned.

All concourse piers are currently envisioned to be two levels, with the flexibility to have some portions be at ramp level to allow for ramp boarding operations. The two-level concourses would allow for passenger enplaning via a boarding bridge on the second level, with a baggage handling system and offices at the apron level. Given the proximity to baggage and arrivals curb, the FIS and sterile corridor would be located adjacent to western concourse pier.

Potential advantages of Alternative 3

- Creates brand new terminal and parking facilities.
- Minimizes terminal phasing disruptions during construction.
- Provides a larger landside area for the CONRAC.
- Maintains historic Wexler terminal for potential repurposing.

Potential disadvantages of Alternative 3

- Represents the highest construction cost of the four alternatives, with minimal reuse opportunities.
- Creates major landside phasing disruptions.
- Locates terminal further away from primary roadway access point.
- Disrupts the connection of the terminal to downtown Palm Springs via Tahquitz Canyon Way.

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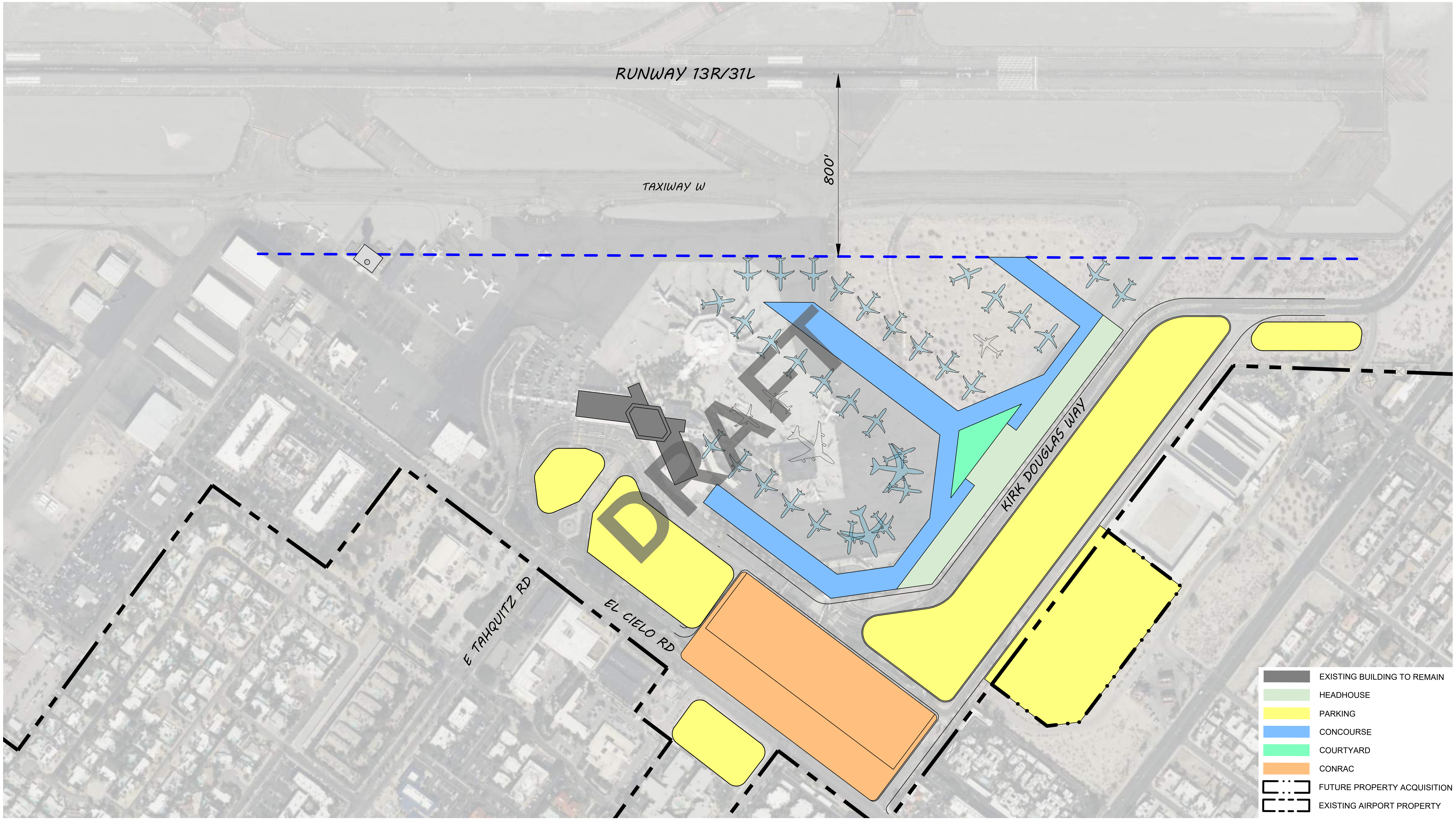
Figure 4-5: Alternative 3



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KIRK DOUGLAS WAY
E TAHQUITZ RD
EL CIELO RD
▇ EXISTING BUILDING TO REMAIN
▇ HEADHOUSE
▇ PARKING
▇ CONCOURSE
▇ COURTYARD
▇ CONRAC
FUTURE PROPERTY ACQUISITION
EXISTING AIRPORT PROPERTY
0 200' 400'
GRAPHIC SCALE IN FEET

PRELIMINARY ALTERNATIVE SCREENING CRITERIA AND SUMMARY

To evaluate these alternative concepts individually and against all concepts, a set of preliminary evaluation criteria was established based on six broad screening elements:

- Passenger Experience.
- Stakeholder Relations.
- Sustainability and Environmental Factors.
- Financial Factors.
- Implementation.
- Operational Performance.

A preliminary screening criteria matrix is provided in **Figure 4-6**. The matrix lists criteria for the six categories along with potential strengths and weaknesses of initial alternatives. Screening criteria and scoring of alternatives were refined based on additional PSP staff input, Working Group input, and further definition of sustainability goals.

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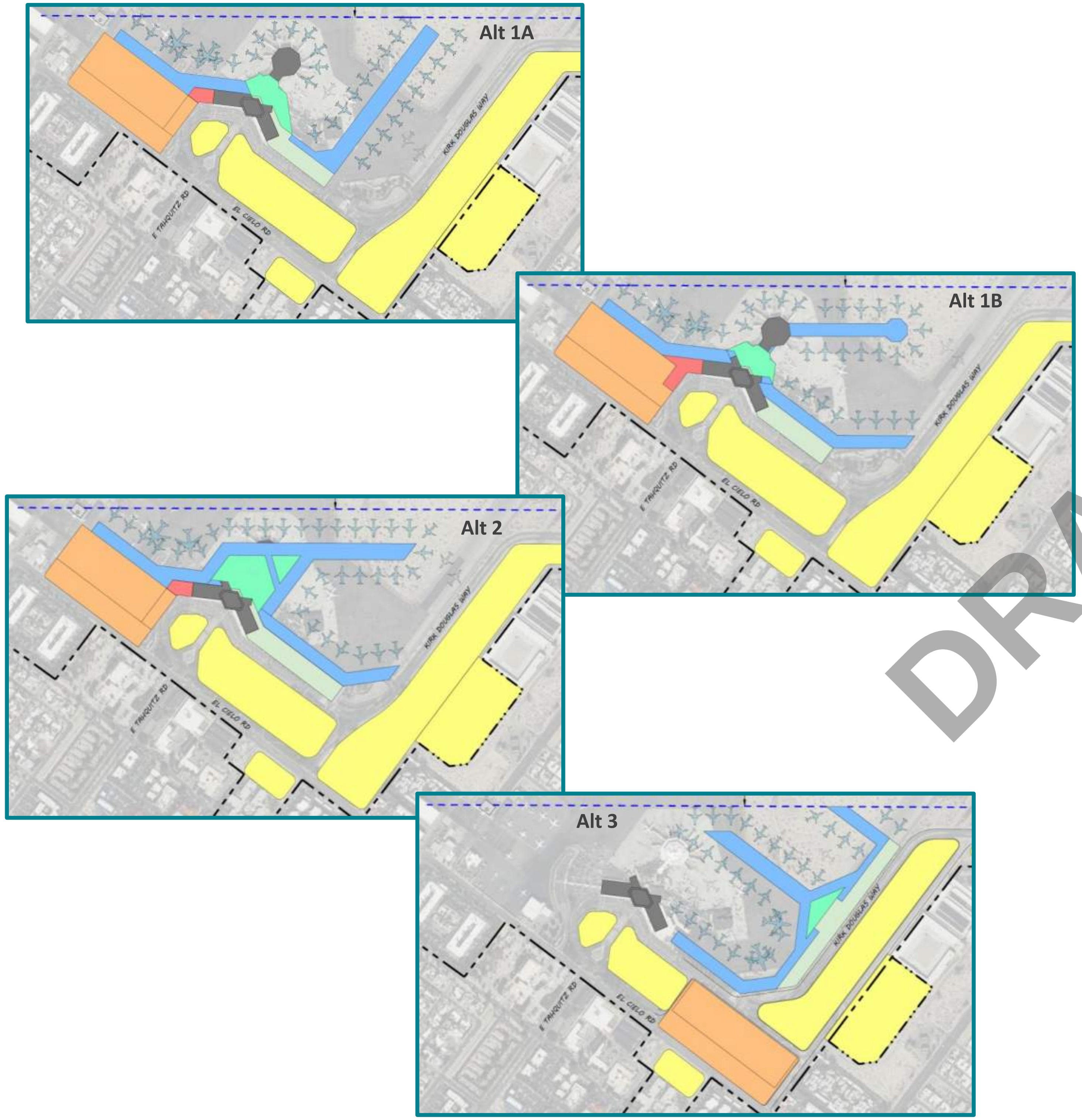
Figure 4-6: Preliminary Terminal Area Concepts Screening Matrix



Initial Terminal Alternative Screening Criteria	Alt. 1A	Alt. 1B	Alt. 2	Alt. 3
Passenger Experience	**+**	**o**	**+**	**o**
Maintains PSP Experience (outdoor space, "front door" access, etc.)	+	+	+	o
Enhance the charm and ease of use of the current terminal	+	o	o	o
Maximizes outdoor space	+	o	+	-
Minimizes walking distances	-	-	+	o
Stakeholder Relations	**o**	**o**	**o**	**o**
Minimizes community, tenant, and user impacts	o	o	-	o
Enhances community, tenant, and user facilities	+	+	+	+
Socially and politically feasible	o	o	o	o
Sustainability and Environmental Factors	**+**	**+**	**+**	**+**
Maximizes reuse of existing facilities	+	+	o	-
Supports PSP resiliency (extreme heat/climate change, earthquakes, etc.)	+	o	+	+
Supports efficient land use/maximizes use of developable space	+	+	+	+
Avoids impacts to and enhances the use of the original Wexler terminal building	+	+	+	+
Accommodates/enhances connections with other modes of transit (bus, rail, etc.)	o	o	o	o
Allows for closure or repurposing of areas during non-peak seasons	+	+	+	+
Supports efficient use and management of resources (energy, waste, and water)	+	o	o	+
Financial Factors	**+**	**+**	**o**	**o**
Promotes long-term financial viability of the Airport	+	+	+	+
Limits order of magnitude costs	+	o	-	-
Enhances revenue potential (concessions, parking, etc.)	+	+	+	+
Minimizes facility footprint and ongoing operations and maintenance costs	+	o	-	o
Implementation	**+**	**o**	**-**	**+**
Ability to phase	+	o	-	o
Flexibility	+	o	o	+
Minimizes impact to stakeholders and operations during construction	o	o	-	+
Operational Performance	**+**	**+**	**+**	**+**
Accommodates terminal airside program requirements (gates, apron etc.)	+	+	+	+
Accommodates terminal landside program requirements	+	+	+	+
Ability to accommodate growth beyond the planning horizon	+	o	+	o
Ability to incorporate future technological changes	+	+	+	+

Strength of the Alternative	**+**
Neither a Strength nor a Weakness of the Alternative	**o**
Weakness of the Alternative	**-**

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Part II – Refined Terminal Area Alternatives

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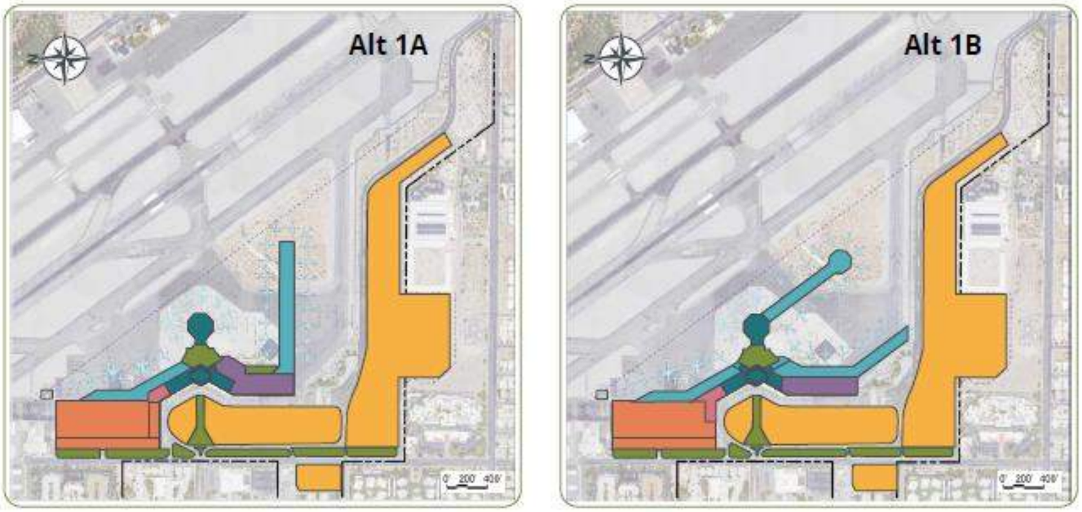
INTRODUCTION

Part I of Chapter 4 analyzed four high-level development concepts that are shown on **Figure 4-7**. These initial alternatives were presented to PSP staff, Palm Springs Airport Commission, Master Plan Working Group members, and the Palm Springs City Council. Additionally, a September 2023 open house provided information to the community on the Master Plan process, work completed to-date, an overview of initial alternatives, and a chance for the public to ask questions and provide feedback.

Figure 4-7: Initial Approach Summary


Alt 1A
Alt 1B
N
0' 200' 400'

Approach 1:
Maximum Reuse

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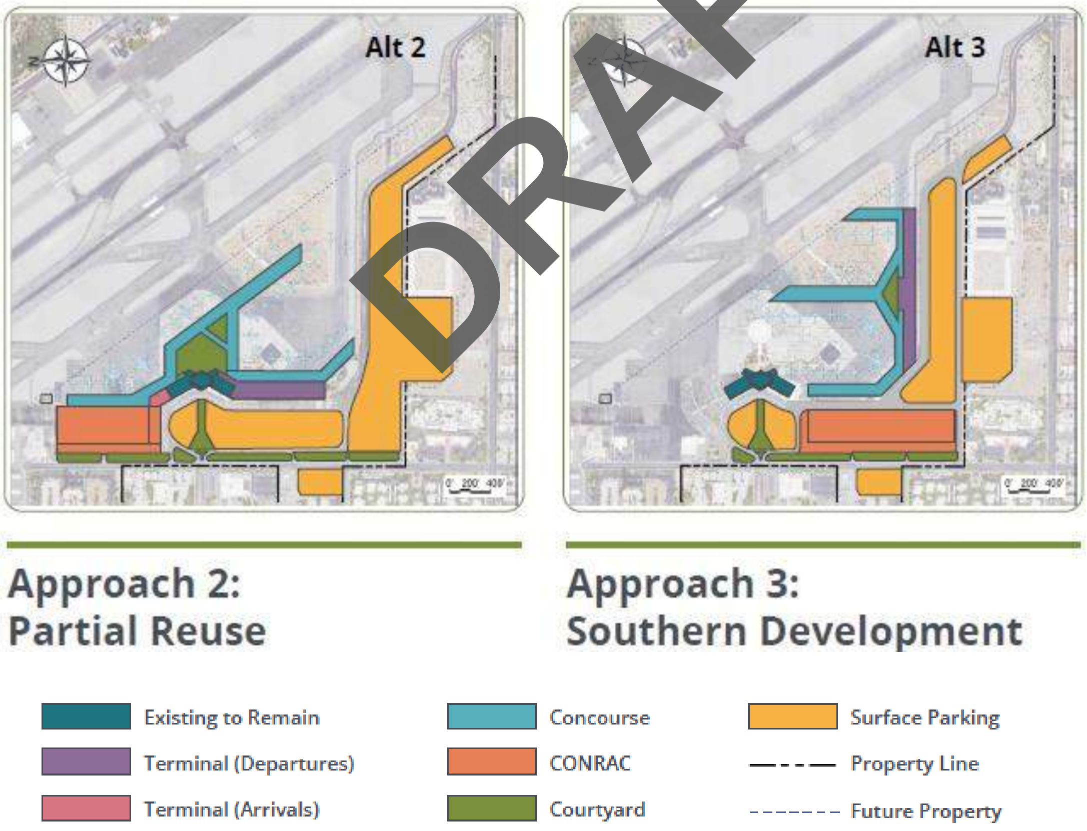
Alt 2
Alt 3
N
0' 200' 400'
Existing to Remain
Terminal (Departures)
Terminal (Arrivals)
Concourse
CONRAC
Courtyard
Surface Parking
Property Line
Future Property

Approach 2:
Partial Reuse

Approach 3:
Southern Development

This section presents refined versions of Alternatives 1A and 3 with the goal of providing additional analysis to the Working Group, Airport Staff, and the City of Palm Springs that would allow for an informed decision on a preferred alternative. The last section of this chapter provides recommendations for incorporating equity and sustainability in the design of any planned terminal area improvements.

Alternatives 1B and 2 were not carried forward for further refinement. The reasons Alternative 1B was not carried forward include:

- Alternative 1B's design is less efficient than Alternative 1A. Specifically, 1B requires substantially more concourse space to meet gate needs compared to 1A.
- Alternative 1B requires funneling additional passengers through the narrow circulation space in the Bono Concourse to the new southeast pier.
- Alternative 1B consists of complex renovations of existing facilities that would increase cost and negatively impact the passenger experience.
- Alternative 1B would reduce post-security outdoor space.

The reasons Alternative 2 was not carried forward include:

- Alternative 2 would require complicated construction phasing.
- Multiple construction phases within the existing terminal footprint would be required.
- Significant disruptions to the passenger experience and operations would be expected during construction.
- Alternative 2 would have high anticipated costs.
- Higher initial costs are expected due to complicated phasing and construction of a comparatively larger facility footprint.
- Higher ongoing operations and maintenance costs due to its larger facility footprint.

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REFINED TERMINAL AREA ALTERNATIVES

Refinements made to Alternative 1A and Alternative 3 are detailed in the following sections. Construction of the entire 20-year development alternative at one time is not feasible. Consequently, a phasing plan has been developed for each alternative focused on minimizing impacts to terminal passengers and tenants during construction and increasing the funding feasibility of the alternative. Both alternatives include four major phases of construction. Additional objectives of alternative phasing include incrementally meeting the four planning activity levels (PALs) detailed in the **Terminal Area Facility Requirements** chapter while minimizing costs. Actual construction of alternatives could be broken down into additional phases or consolidated into fewer phases depending on future circumstances and preferences.

Alternative 1A Overview

Changes to Alternative 1A from the initial alternative version include:

- The addition of two rotundas to the southern pier;
- The relocation of Kirk Douglas Way to the south to accommodate dual ADG-III taxilanes between the concourses and additional space for headhouse expansion and post-security outdoor space;
- The addition of a planned Ground Transportation Center (GTC) along with a Central Utility Plant (CUP); and
- The addition of roadway and surface parking details.

The full build out of refined Alternative 1A is shown on **Figure 4-8**. Primary access remains at Tahquitz Canyon Way and El Cielo Road, with secondary access from the Coachella Valley via Ramon Road and a relocated and reconfigured Kirk Douglas Way. Public access to the Consolidated Rent-A-Car facility (CONRAC is at the west side of the facility via El Cielo. A traffic signal is proposed at the entrance. An access road for deliveries to the southern end of the proposed terminal is proposed.

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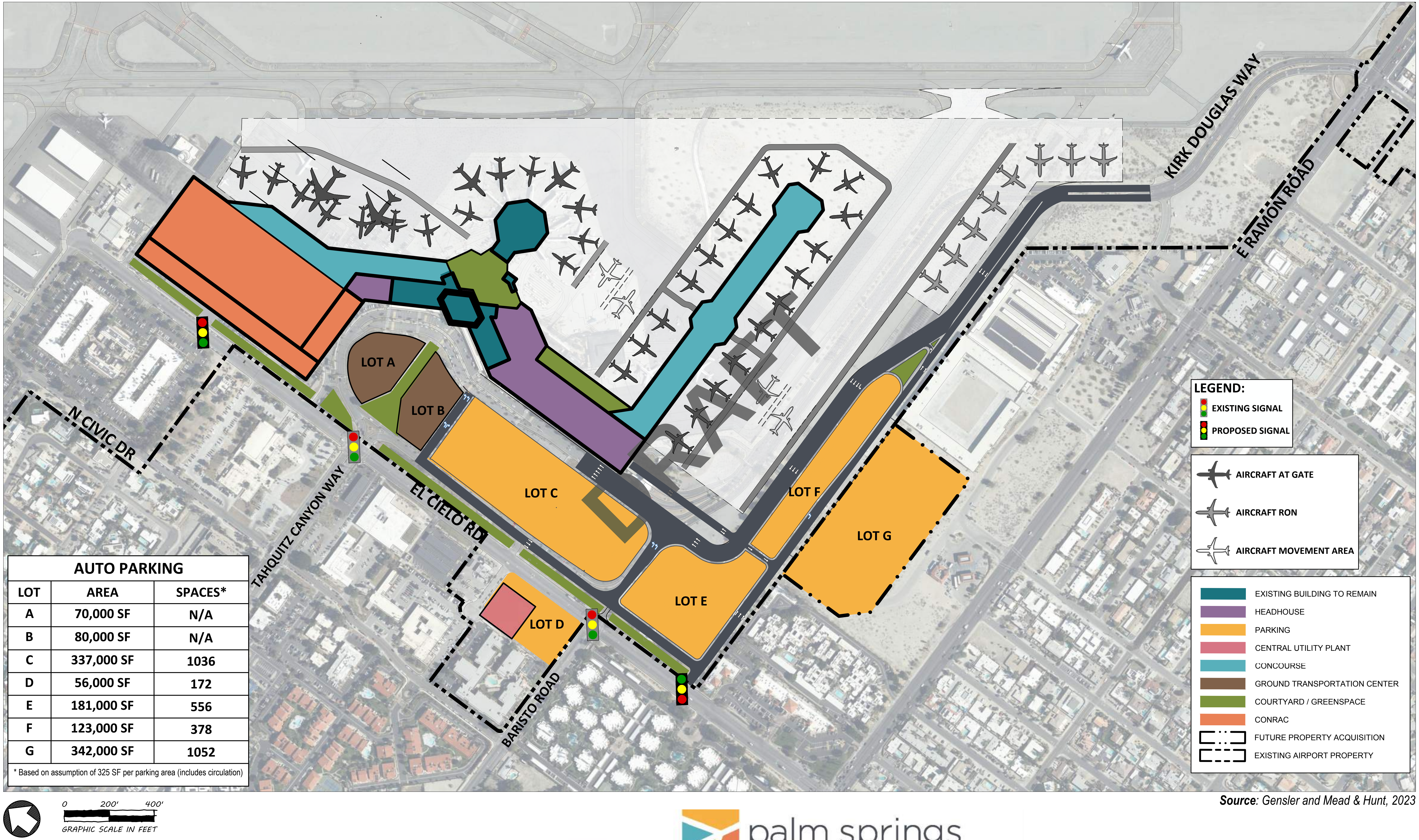
Figure 4-8: Alternative 1A Full Build


KIRK DOUGLAS WAY
E RAMON ROAD
N CIVIC DR
TAHQUITZ CANYON WAY
EL CIELO RD
BARISTO ROAD
LOT A
LOT B
LOT C
LOT D
LOT E
LOT F
LOT G
LEGEND:
EXISTING SIGNAL
PROPOSED SIGNAL
AIRCRAFT AT GATE
AIRCRAFT RON
AIRCRAFT MOVEMENT AREA
EXISTING BUILDING TO REMAIN
HEADHOUSE
PARKING
CENTRAL UTILITY PLANT
CONCOURSE
GROUND TRANSPORTATION CENTER
COURTYARD / GREENSPACE
CONRAC
FUTURE PROPERTY ACQUISITION
EXISTING AIRPORT PROPERTY
0
200'
400'
GRAPHIC SCALE IN FEET

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AUTO PARKING

LOT	AREA	SPACES*
A	70,000 SF	N/A
B	80,000 SF	N/A
C	337,000 SF	1036
D	56,000 SF	172
E	181,000 SF	556
F	123,000 SF	378
G	342,000 SF	1052

* Based on assumption of 325 SF per parking area (includes circulation)

Source: Gensler and Mead & Hunt, 2023

The roadway network adjacent to the terminal would be maintained as a single-level roadway system, expanding the curbsides and terminal to the south and north.

Along the curbside, the ticketing and baggage claim areas are expanded to the south and north, respectively. This accommodates growth in the ticketing, security, and the baggage claim programs. Ticketing would shift south, thereby allowing for the SSCP to also expand. The proposed GTC would accommodate public transportation connections, shuttles, and potentially taxis and ride share vehicles.

Post security, travelers would enter an expanded courtyard providing central access to three concourses: a new north concourse, the existing Bono Concourse, and a new south concourse. Travelers would also have the option of accessing the southern concourse without entering an outdoor courtyard. The existing Bono Concourse remains in this concept.

The new north concourse can accommodate up to eight narrowbody gates. Four gates are MARS gates for the FIS, and they could be swapped out for widebody aircraft at a 2:1 ratio. Given the north concourse’s proximity to baggage claim and the arrivals curb, this concourse would also have a sterile corridor and FIS allowing for arriving international flight operations.

The new southern concourse would accommodate 19 narrowbody gates serving domestic or pre-cleared arriving operations. The concourse would be dual-level, accommodating the expanded baggage handling system at the apron level and loading by jet bridge at the second level. A dual level concourse could also accommodate ramp-loaded aircraft operations.

Options for public and employee parking expansion were considered for every phase of development. Surface parking square footage and the assumed parking spaces provided by proposed lots are detailed in phasing exhibits.

The ROM cost for the full build out of Alternative 1A is approximately $2.2 billion. The full build out would accommodate 34 narrowbody aircraft gate positions and eight remain overnight (RON) parking positions.

Alternative 1A Phasing

1A - Phase 1

The initial project phase includes the build-out of a new north concourse with 5 gates, which can flex to 7 narrowbody gates (**Figure 4-9**). Accommodations for international arrivals with a commercial aviation FIS is included in this phase. The proposed CONRAC connects directly to the terminal, while the GTC sits in front of the main entrance. A new CUP would be constructed on the west side of El Cielo adjacent to a proposed parking lot. Phase 1 in this concept would increase the number of available narrowbody aircraft gate positions from 18 to 25. This number is reduced to 23 if two widebody aircraft are present at the new north concourse. The ROM cost for Phase 1 is approximately $900 million.

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1A - Phase 2

The proposed Phase 2 of this concept (**Figure 4-10**) would increase ticketing and security and add a new southern concourse pier with eight gates. The Regional Jet Concourse would be demolished to allow for the pier construction, while Kirk Douglas Way would be realigned to accommodate dual taxiways on both sides of the pier and provide additional space for headhouse and post-security outdoor space. Vehicle flow and surface parking would be reconfigured to account for the realignment of Kirk Douglas Way and maximizing parking potential. There would be 24 narrowbody aircraft gate positions after completion of this phase. The ROM cost for Phase 2 is approximately $1.1 billion.

1A - Phase 3

Phase 3 of this concept (**Figure 4-11**) would extend the south pier to the east and accommodate five additional gates. After completion of Phase 3 there would be 29 narrowbody aircraft gate positions. The ROM cost for Phase 3 is approximately $100 million.

1A - Phase 4

The proposed Phase 4 of this concept (**Figure 4-12**) is the final phase and includes the last expansion to the south pier with five additional gates added to the east end. There would be 34 total narrowbody gate positions after Phase 4 is completed. The ROM cost for Phase 4 is approximately $100 million.

A summary of Alternative 1A phasing is provided in **Table 4-1** along with PAL requirements for gate positions and vehicle parking.

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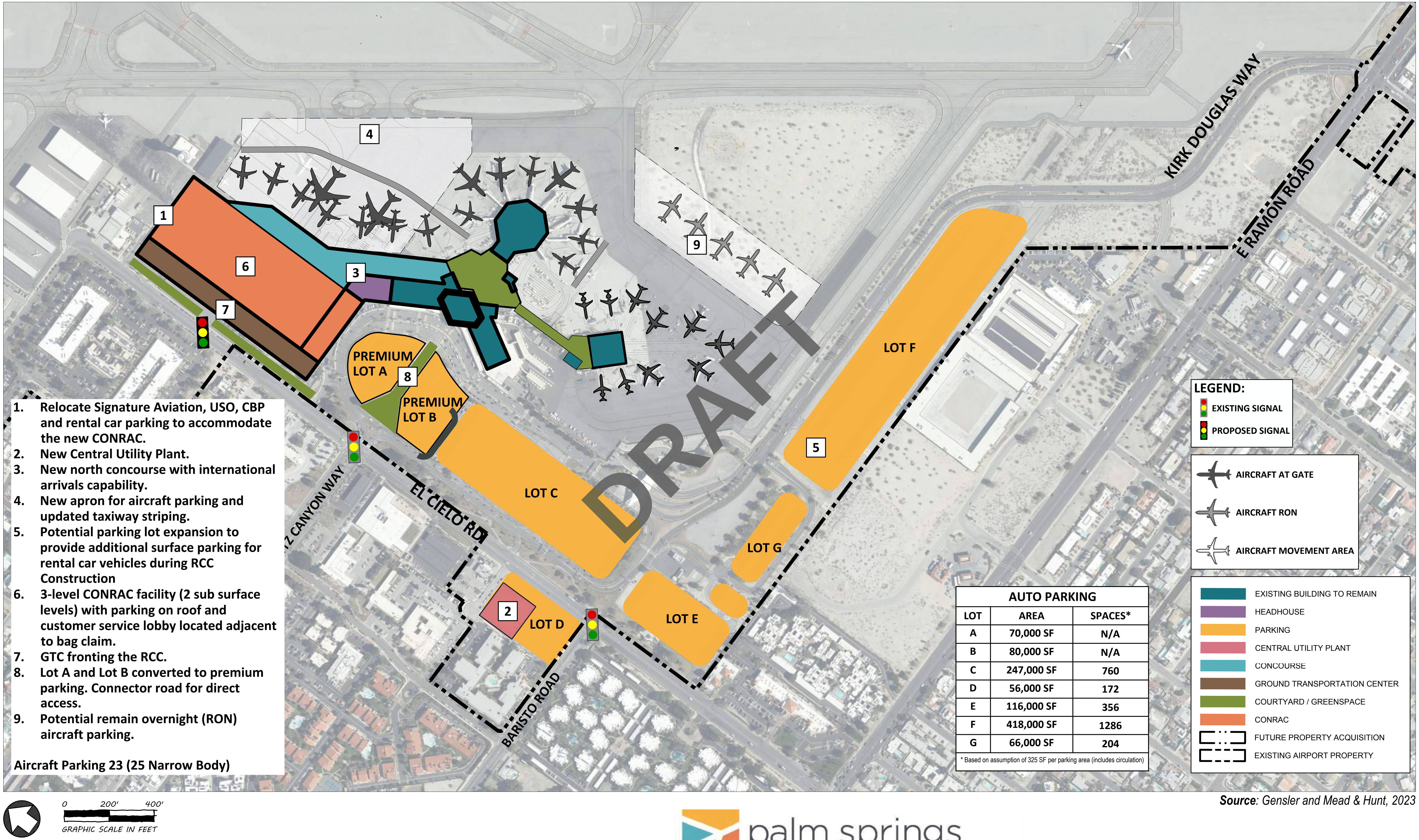
Figure 4-9: Alternative 1A Phase 1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PROPOSED SIGNAL
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AIRCRAFT MOVEMENT AREA
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CONCOURSE
GROUND TRANSPORTATION CENTER
COURTYARD / GREENSPACE
CONRAC
FUTURE PROPERTY ACQUISITION
EXISTING AIRPORT PROPERTY
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GRAPHIC SCALE IN FEET

1. Relocate Signature Aviation, USO, CBP and rental car parking to accommodate the new CONRAC.
2. New Central Utility Plant.
3. New north concourse with international arrivals capability.
4. New apron for aircraft parking and updated taxiway striping.
5. Potential parking lot expansion to provide additional surface parking for rental car vehicles during RCC Construction
6. 3-level CONRAC facility (2 sub surface levels) with parking on roof and customer service lobby located adjacent to bag claim.
7. GTC fronting the RCC.
8. Lot A and Lot B converted to premium parking. Connector road for direct access.
9. Potential remain overnight (RON) aircraft parking.

Aircraft Parking 23 (25 Narrow Body)

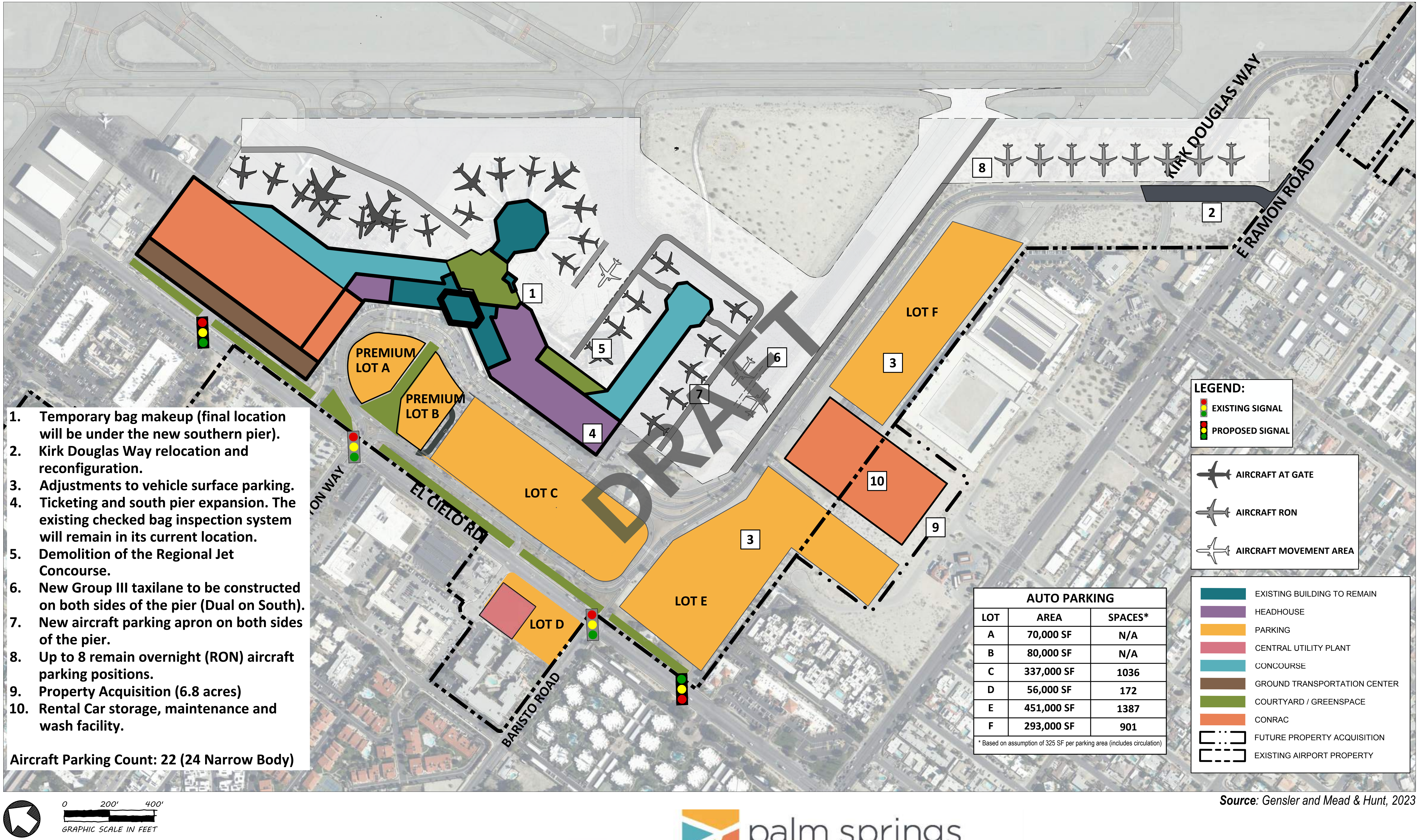
AUTO PARKING

LOT	AREA	SPACES*
A	70,000 SF	N/A
B	80,000 SF	N/A
C	247,000 SF	760
D	56,000 SF	172
E	116,000 SF	356
F	418,000 SF	1286
G	66,000 SF	204

* Based on assumption of 325 SF per parking area (includes circulation)

Source: Gensler and Mead & Hunt, 2023

Figure 4-10: Alternative 1A Phase 2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AIRCRAFT AT GATE
AIRCRAFT RON
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GROUND TRANSPORTATION CENTER
COURTYARD / GREENSPACE
CONRAC
FUTURE PROPERTY ACQUISITION
EXISTING AIRPORT PROPERTY
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200'
400'
GRAPHIC SCALE IN FEET

1. Temporary bag makeup (final location will be under the new southern pier).
2. Kirk Douglas Way relocation and reconfiguration.
3. Adjustments to vehicle surface parking.
4. Ticketing and south pier expansion. The existing checked bag inspection system will remain in its current location.
5. Demolition of the Regional Jet Concourse.
6. New Group III taxilane to be constructed on both sides of the pier (Dual on South).
7. New aircraft parking apron on both sides of the pier.
8. Up to 8 remain overnight (RON) aircraft parking positions.
9. Property Acquisition (6.8 acres)
10. Rental Car storage, maintenance and wash facility.

Aircraft Parking Count: 22 (24 Narrow Body)

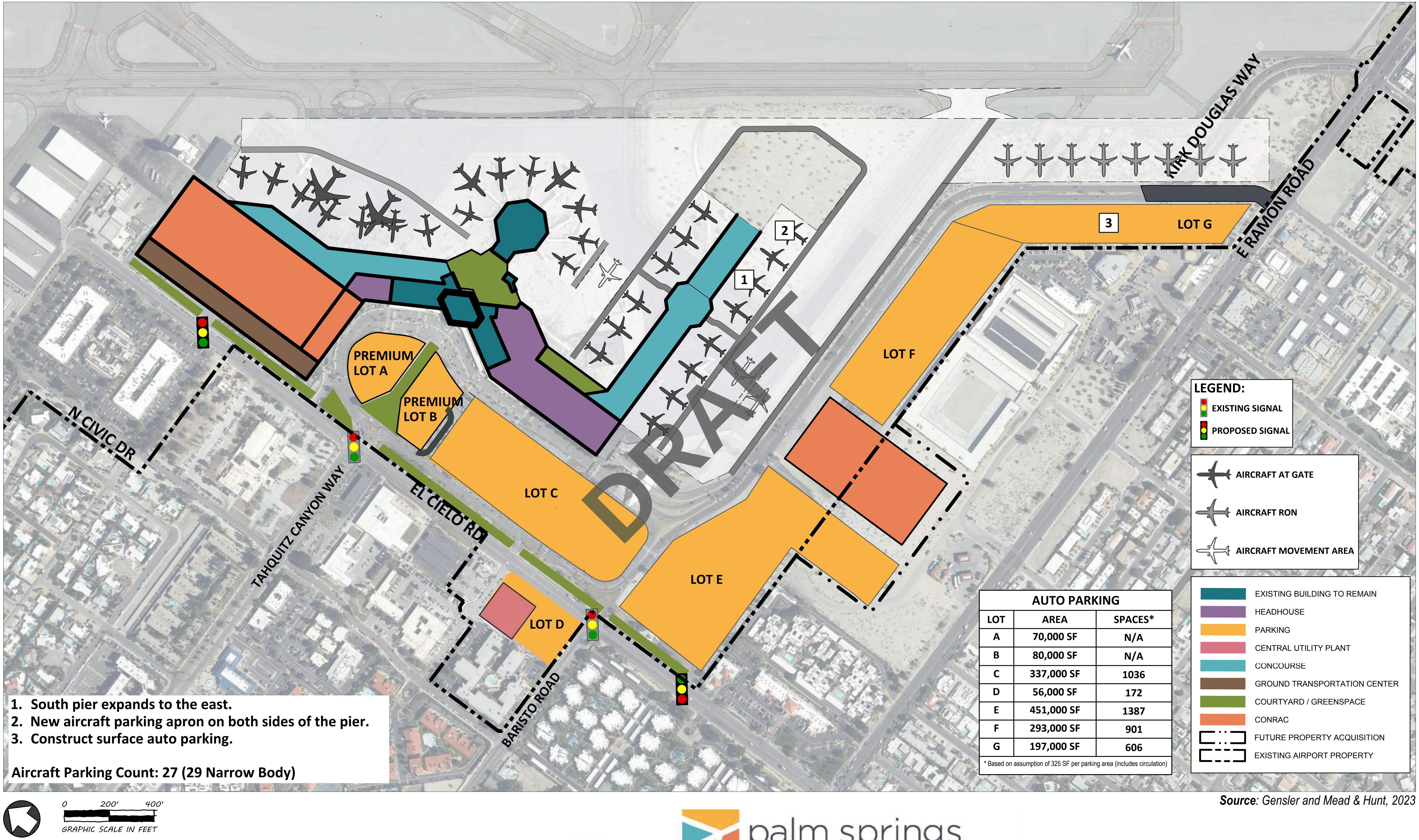
AUTO PARKING

LOT	AREA	SPACES*
A	70,000 SF	N/A
B	80,000 SF	N/A
C	337,000 SF	1036
D	56,000 SF	172
E	451,000 SF	1387
F	293,000 SF	901

* Based on assumption of 325 SF per parking area (includes circulation)

Source: Gensler and Mead & Hunt, 2023

Figure 4-11: Alternative 1A Phase 3



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COURTYARD / GREENSPACE
CONRAC
FUTURE PROPERTY ACQUISITION
EXISTING AIRPORT PROPERTY
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200'
400'
GRAPHIC SCALE IN FEET

1. South pier expands to the east.
2. New aircraft parking apron on both sides of the pier.
3. Construct surface auto parking.

Aircraft Parking Count: 27 (29 Narrow Body)

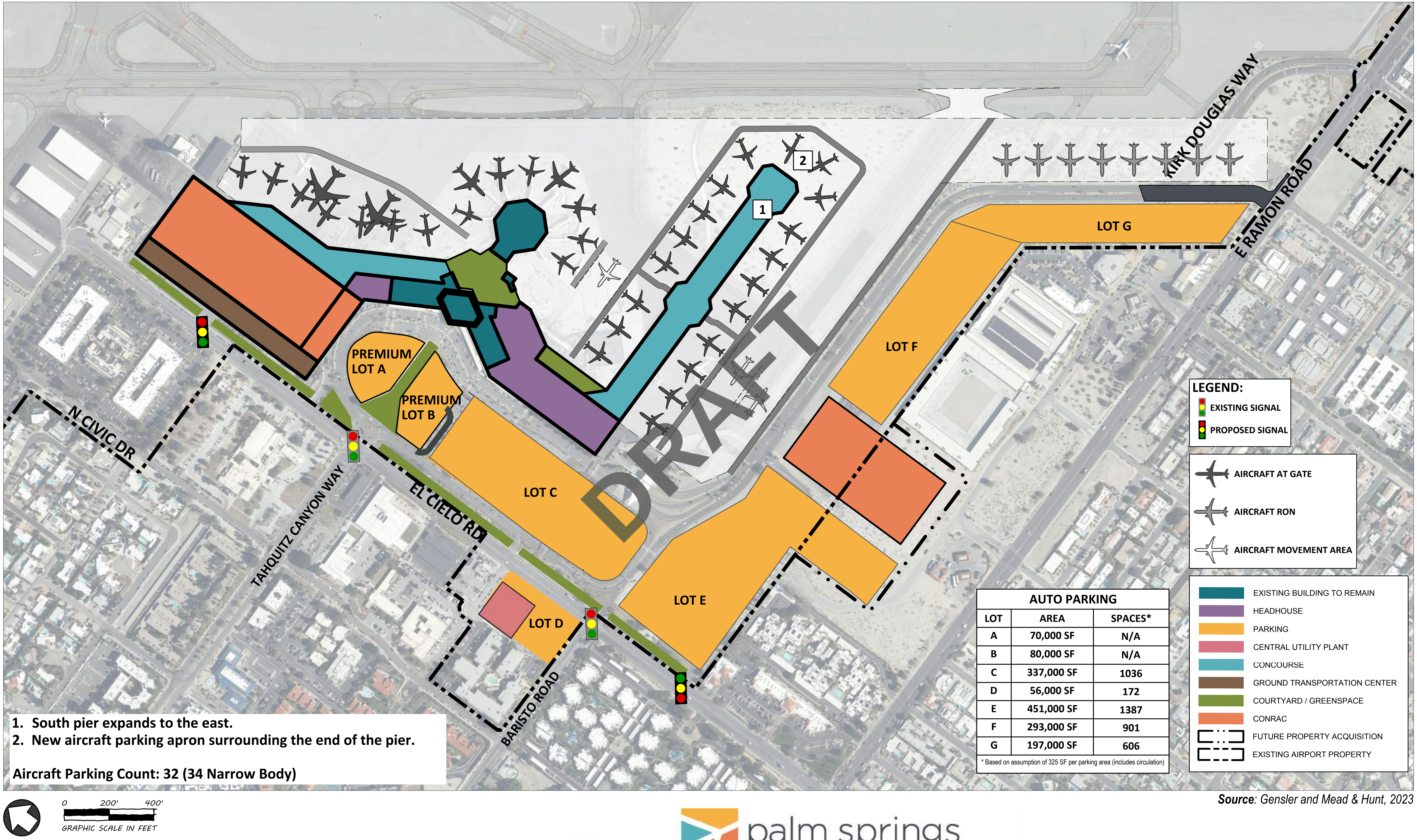
AUTO PARKING

LOT	AREA	SPACES*
A	70,000 SF	N/A
B	80,000 SF	N/A
C	337,000 SF	1036
D	56,000 SF	172
E	451,000 SF	1387
F	293,000 SF	901
G	197,000 SF	606

* Based on assumption of 325 SF per parking area (includes circulation)

Source: *Gensler and Mead & Hunt, 2023*

Figure 4-12: Alternative 1A Phase 4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TAHQUITZ CANYON WAY
EL CIELO RD
BARISTO ROAD
PREMIUM LOT A
PREMIUM LOT B
LOT C
LOT D
LOT E
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LEGEND:
EXISTING SIGNAL
PROPOSED SIGNAL
AIRCRAFT AT GATE
AIRCRAFT RON
AIRCRAFT MOVEMENT AREA
🟦 EXISTING BUILDING TO REMAIN
🟪 HEADHOUSE
🟧 PARKING
🟥 CENTRAL UTILITY PLANT
🟦 CONCOURSE
🟫 GROUND TRANSPORTATION CENTER
🟩 COURTYARD / GREENSPACE
🟧 CONRAC
FUTURE PROPERTY ACQUISITION
EXISTING AIRPORT PROPERTY
0 200' 400'
GRAPHIC SCALE IN FEET
DRAFT

AUTO PARKING

LOT	AREA	SPACES*
A	70,000 SF	N/A
B	80,000 SF	N/A
C	337,000 SF	1036
D	56,000 SF	172
E	451,000 SF	1387
F	293,000 SF	901
G	197,000 SF	606

* Based on assumption of 325 SF per parking area (includes circulation)

1. South pier expands to the east.
2. New aircraft parking apron surrounding the end of the pier.

Aircraft Parking Count: 32 (34 Narrow Body)

Source: Gensler and Mead & Hunt, 2023

Table 4-1: Alternative 1A Summary

Consideration	Phase 1	Phase 2	Phase 3	Phase 4
Phase ROM Cost	$900M	$1.1B	$100M	$100M
ROM Total Cost	***$900M***	***$2B***	***$2.1B***	***$2.2B***
Gate Positions (Narrowbody)	25	24	29	34
RON Positions	5	8	8	8
Outdoor Courtyard (secure side s.f.)	61,000	88,000	88,000	88,000
Surface Parking Spaces	2,778	3,194	3,194	3,194
Planning Activity Level Requirements	**PAL 1**	**PAL 2**	**PAL 3**	**PAL 4**
Gate Positions (Narrowbody)	23	24	27	32
Public & Employee Parking Spaces	2,063	2,450	2,756	3,321

Alternative 3 Overview

Changes to Alternative 3 from the initial alternative version include:

- The easternmost pier is no longer on a north-south alignment; it now runs parallel to the runway and adjacent to the relocated Kirk Douglas Way.
- The addition of a GTC along with a CUP.
- Additional roadway and surface parking details are provided.

The full build out of refined Alternative 3 is shown on **Figure 4-13**.

Alternative 3 replaces and relocates the airport terminal and all concourses to the southern side of the terminal area along the relocated and reconfigured Kirk Douglas Way. Given the historic nature of the Wexler terminal building it would be the only structure to remain, and its new function would be decided by the community. The new terminal would span east and west, with two concourse piers extending in a north and south alignment and the third pier running parallel to the runway along Kirk Douglas Way. Between the western and central concourse piers is a dual ADG-III taxilane or single ADG-V taxilane, and the two MARs positions.

Access to the terminal from Tahquitz and El Cielo would remain; however, major reworks of the landside roadway system, pedestrian access, and surface parking is anticipated. Secondary access from El Cielo would be available via a proposed road along the southern edge of airport property. Access from the Coachella Valley is provided via Ramon Road and the reconfigured Kirk Douglas Way. Public access to the CONRAC is at the west side of the facility via El Cielo. A traffic signal is proposed at the entrance.

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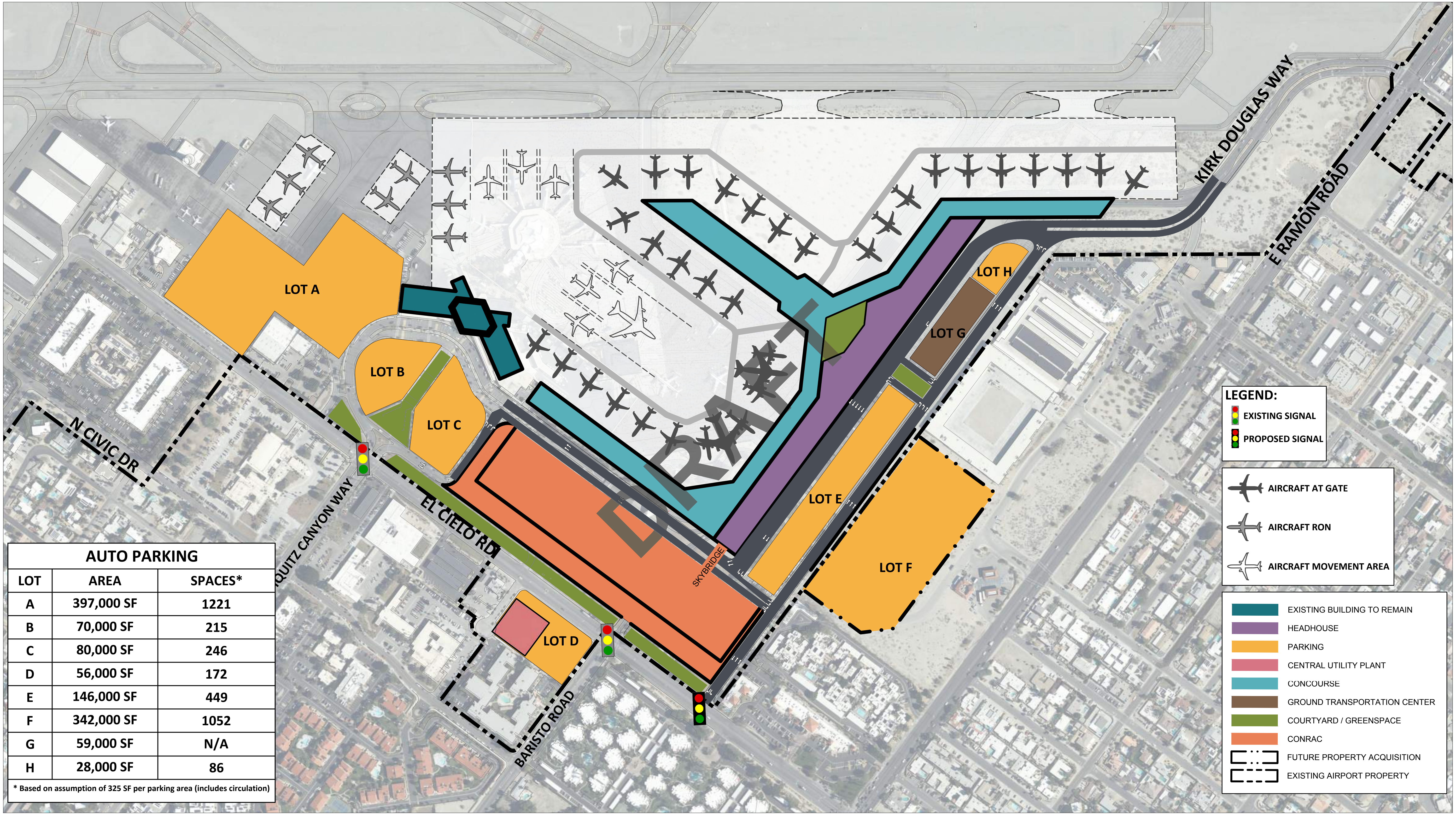
Figure 4-13: Alternative 3 Full Build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EL CIELO RD
BARISTO ROAD
SKYBRIDGE
LEGEND:
EXISTING SIGNAL
PROPOSED SIGNAL
AIRCRAFT AT GATE
AIRCRAFT RON
AIRCRAFT MOVEMENT AREA
EXISTING BUILDING TO REMAIN
HEADHOUSE
PARKING
CENTRAL UTILITY PLANT
CONCOURSE
GROUND TRANSPORTATION CENTER
COURTYARD / GREENSPACE
CONRAC
FUTURE PROPERTY ACQUISITION
EXISTING AIRPORT PROPERTY
0 200' 400'
GRAPHIC SCALE IN FEET

AUTO PARKING

LOT	AREA	SPACES*
A	397,000 SF	1221
B	70,000 SF	215
C	80,000 SF	246
D	56,000 SF	172
E	146,000 SF	449
F	342,000 SF	1052
G	59,000 SF	N/A
H	28,000 SF	86

* Based on assumption of 325 SF per parking area (includes circulation)

Source: Gensler and Mead & Hunt, 2023

The new terminal would have the departures curb and ticketing at the east end, and the arrivals curb and baggage claim at the west end. The proposed GTC would accommodate public transportation connections, shuttles, and potentially taxis and ride share vehicles. The SSCP is located at the center of the terminal, between ticketing and baggage. There is an opportunity at this point for passengers to ascend to a second level, allowing for space at the apron level for the baggage handling system.

Post-security passengers can remain in the terminal building or enter a newly planned central open-air courtyard. Covered portions of the terminal could be opened to the courtyard while providing coverage from sun or rain, or it could be fully enclosed and conditioned.

All concourse piers are currently envisioned to be two levels, with the flexibility to have some portions be at ramp level to allow for ramp boarding operations. The two-level concourses would allow for passenger enplaning via a boarding bridge on the second level, with a baggage handling system and offices at the apron level. Given the proximity to baggage and arrivals curb, the FIS and sterile corridor would be located adjacent to western concourse pier.

Options for public and employee parking expansion were considered for every phase of development. Surface parking square footage and the assumed parking spaces provided by proposed lots are detailed in phasing exhibits. If Signature Flight Support is relocated to the other side of the airfield, available property could be converted to surface parking. For planning purposes, Alternative 3 phasing will show conversion of a large portion of this property to parking. Passengers utilizing this lot and other remote lots would likely require shuttle transportation to and from the terminal GTC.

The ROM cost for the full build out of Alternative 3 is approximately $2.8 billion. The full build out would accommodate 32 narrowbody aircraft gate positions and eight RON parking positions.

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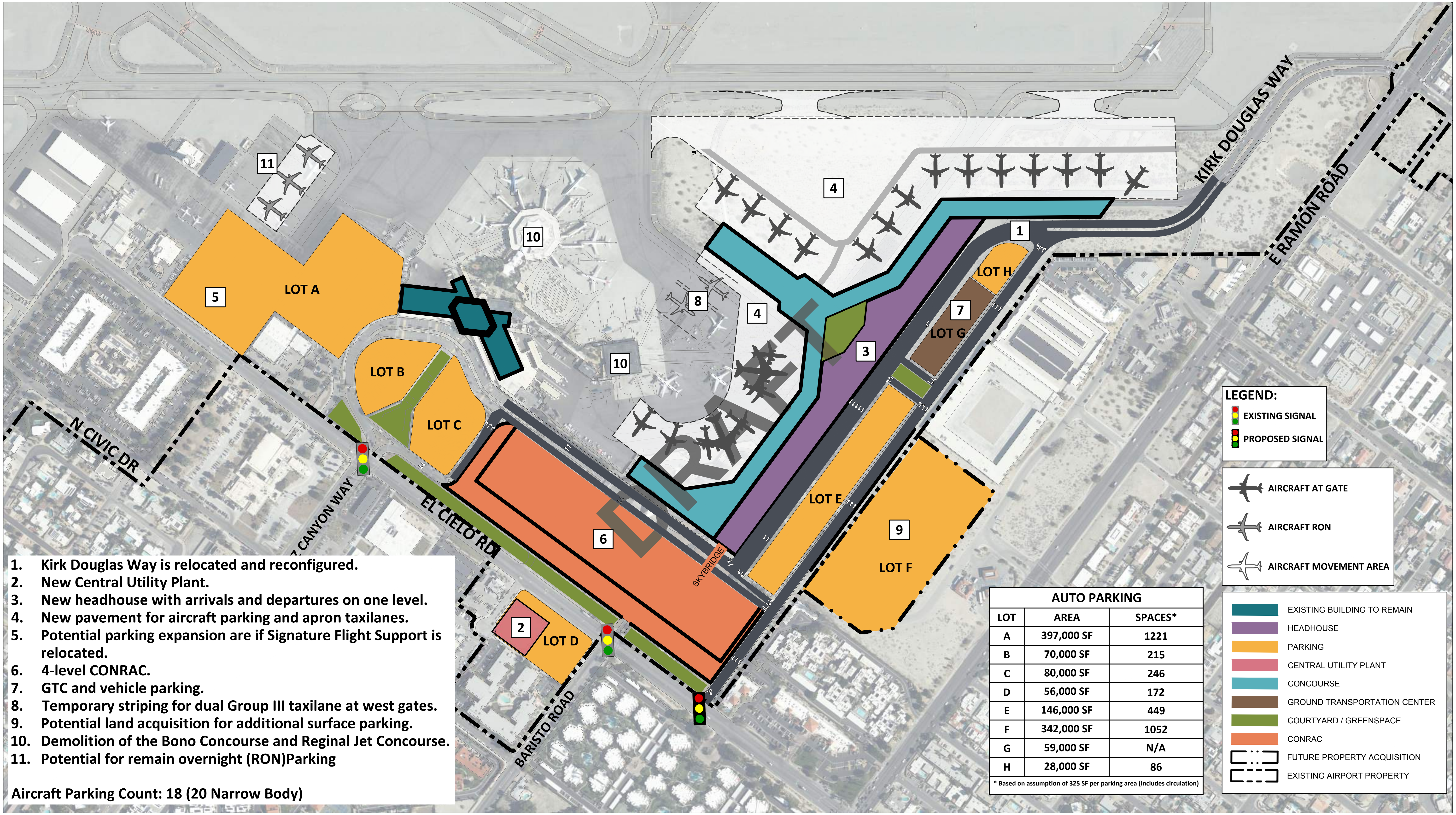
Alternative 3 Phasing

3 - Phase 1

Phase 1 of this concept includes an all-new terminal building/headhouse on the south side of the terminal area (**Figure 4-14**). Phase 1 focuses on the processors, ticketing, security, baggage claim, baggage screening, and Customs and Border Protection for international arrivals. Phase 1 increases the number of available narrowbody aircraft gate positions from the 18 available today to 20. The number of gate positions is reduced to 18 if two widebody aircraft are present. A new CUP would be constructed on the west side of El Cielo adjacent to a potential employee parking lot. The new CONRAC would be located to the west of the new terminal adjacent to bag claim. Kirk Douglas Way would be relocated to the south, and a GTC is planned directly across from the main entrance. The ROM cost for Phase 1 is approximately $2.2 billion.

Figure 4-14: Alternative 3 Phase 1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200'
400'
GRAPHIC SCALE IN FEET

1. Kirk Douglas Way is relocated and reconfigured.
2. New Central Utility Plant.
3. New headhouse with arrivals and departures on one level.
4. New pavement for aircraft parking and apron taxilanes.
5. Potential parking expansion are if Signature Flight Support is relocated.
6. 4-level CONRAC.
7. GTC and vehicle parking.
8. Temporary striping for dual Group III taxilane at west gates.
9. Potential land acquisition for additional surface parking.
10. Demolition of the Bono Concourse and Reginal Jet Concourse.
11. Potential for remain overnight (RON)Parking

Aircraft Parking Count: 18 (20 Narrow Body)

AUTO PARKING

LOT	AREA	SPACES*
A	397,000 SF	1221
B	70,000 SF	215
C	80,000 SF	246
D	56,000 SF	172
E	146,000 SF	449
F	342,000 SF	1052
G	59,000 SF	N/A
H	28,000 SF	86

* Based on assumption of 325 SF per parking area (includes circulation)

LEGEND:

- EXISTING SIGNAL
- PROPOSED SIGNAL

- AIRCRAFT AT GATE
- AIRCRAFT RON
- AIRCRAFT MOVEMENT AREA

- 🟦 EXISTING BUILDING TO REMAIN
- 🟪 HEADHOUSE
- 🟧 PARKING
- 🟥 CENTRAL UTILITY PLANT
- 🟦 CONCOURSE
- 🟫 GROUND TRANSPORTATION CENTER
- 🟩 COURTYARD / GREENSPACE
- 🟧 CONRAC
- ▭ FUTURE PROPERTY ACQUISITION
- ▭ EXISTING AIRPORT PROPERTY

Source: *Gensler and Mead & Hunt, 2023*

3 - Phase 2

Phase 2 of this concept (**Figure 4-15**) would include the addition of four new gates to the central pier that would be built during Phase 1 of Alternative 3. The addition of the four gates would occur after the existing Bono Concourse and Regional Jet Concourse are demolished, and the adjacent apron has been expanded and rehabilitated. The terminal designed by Donald Wexler would be restored during this phase for future use. After completion of Phase 2 there would be 24 total narrowbody aircraft gate positions. The ROM cost for Phase 2 is approximately $400 million.

3 - Phase 3

During Phase 3 of this concept (**Figure 4-16**) the central pier would be extended to accommodate four additional gates for a total of 28 narrowbody aircraft gate positions. The ROM cost for Phase 3 is approximately $100 million.

3 - Phase 4

Phase 4 is the final phase proposed phase of this concept (**Figure 4-17**) and includes the expansion of the west pier to accommodate four additional gates for a total of 32 narrowbody aircraft gate positions. The ROM cost for Phase 4 is approximately $100 million.

A summary of Alternative 3 phasing is provided in **Table 4-2** along with PAL requirements for gate positions and vehicle parking.

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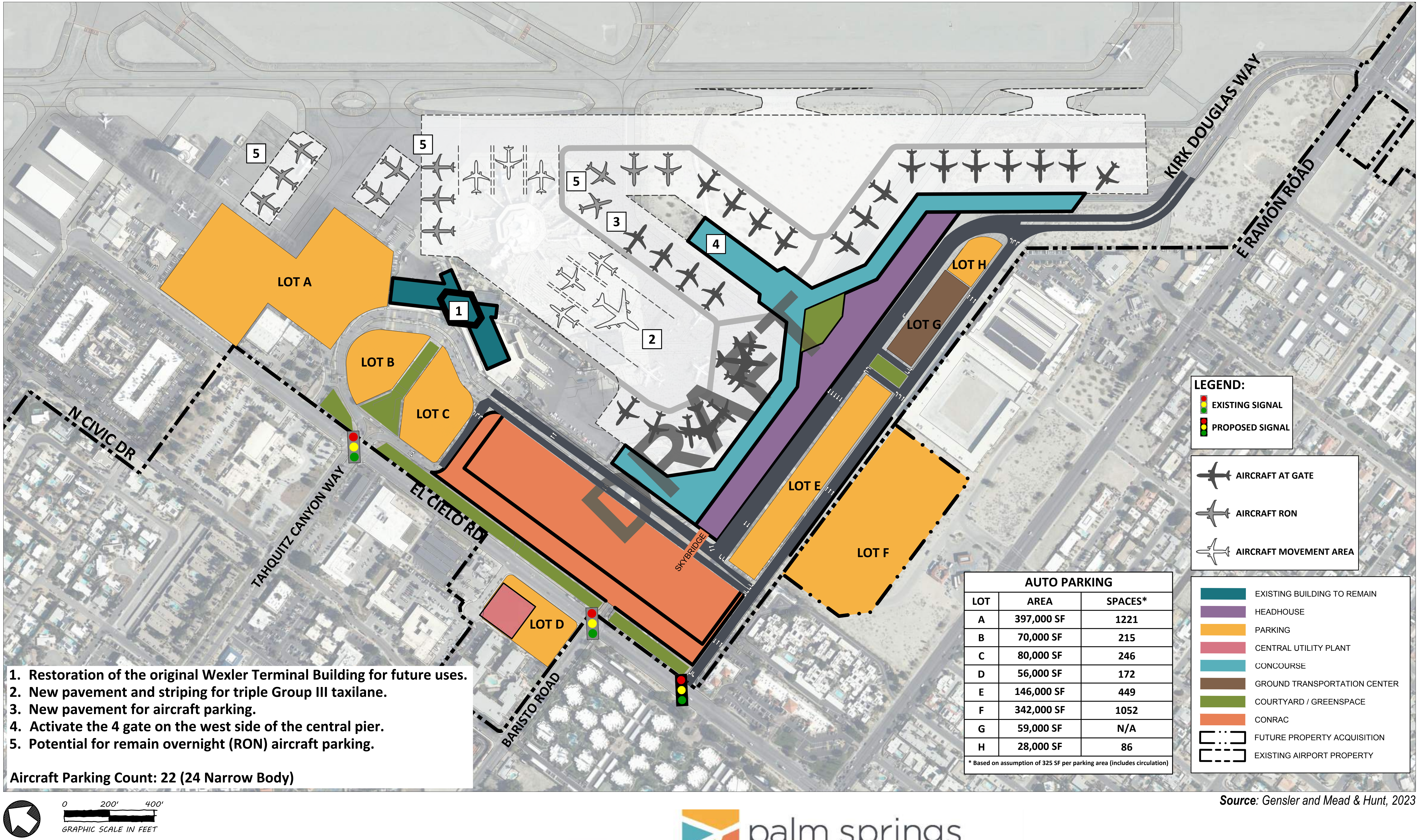
Table 4-2: Alternative 3 Summary

Consideration	Phase 1	Phase 2	Phase 3	Phase 4
Phase ROM Cost	$2.2B	$400M	$100M	$100M
Running ROM Cost Total	***$2.2B***	***$2.6B***	***$2.7B***	***$2.8B***
Gate Positions (Narrowbody)	20	24	28	32
RON Positions	3	11	8	8
Outdoor Courtyard (secure side s.f.)	26,000	26,000	26,000	26,000
Surface Parking Spaces	3,441	3,441	3,441	3,441
Planning Activity Level Requirements	**PAL 1**	**PAL 2**	**PAL 3**	**PAL 4**
Gate Positions (Narrowbody)	23	24	27	32
Public & Employee Parking Spaces	2,063	2,450	2,756	3,321

Figure 4-15: Alternative 3 Phase 2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BARISTO ROAD
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DRAFT
LEGEND:
EXISTING SIGNAL
PROPOSED SIGNAL
AIRCRAFT AT GATE
AIRCRAFT RON
AIRCRAFT MOVEMENT AREA
EXISTING BUILDING TO REMAIN
HEADHOUSE
PARKING
CENTRAL UTILITY PLANT
CONCOURSE
GROUND TRANSPORTATION CENTER
COURTYARD / GREENSPACE
CONRAC
FUTURE PROPERTY ACQUISITION
EXISTING AIRPORT PROPERTY
0
200'
400'
GRAPHIC SCALE IN FEET

1. Restoration of the original Wexler Terminal Building for future uses.
2. New pavement and striping for triple Group III taxilane.
3. New pavement for aircraft parking.
4. Activate the 4 gate on the west side of the central pier.
5. Potential for remain overnight (RON) aircraft parking.

Aircraft Parking Count: 22 (24 Narrow Body)

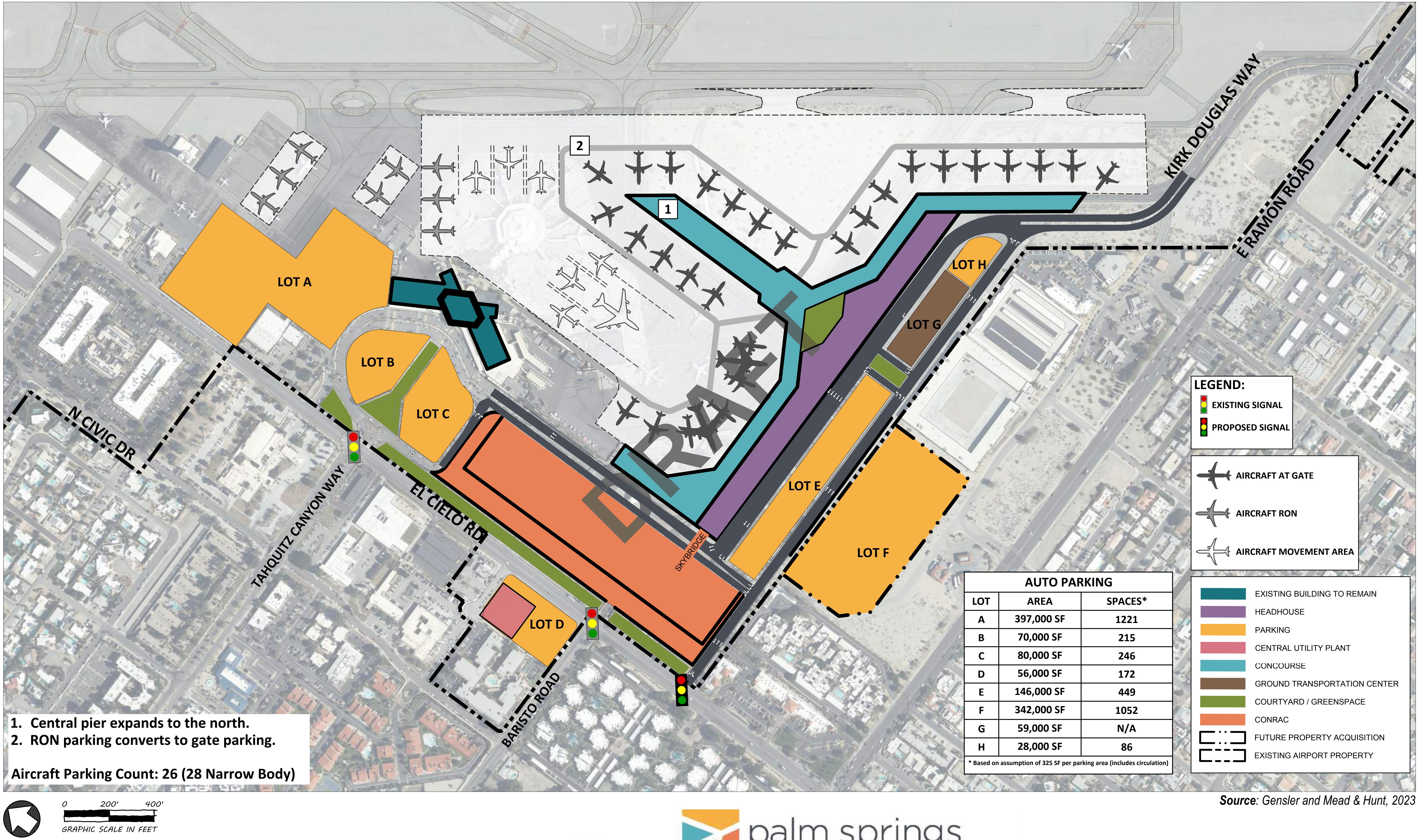
AUTO PARKING

LOT	AREA	SPACES*
A	397,000 SF	1221
B	70,000 SF	215
C	80,000 SF	246
D	56,000 SF	172
E	146,000 SF	449
F	342,000 SF	1052
G	59,000 SF	N/A
H	28,000 SF	86

* Based on assumption of 325 SF per parking area (includes circulation)

Source: Gensler and Mead & Hunt, 2023

Figure 4-16: Alternative 3 Phase 3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TAHQUITZ CANYON WAY
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BARISTO ROAD
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LEGEND:
EXISTING SIGNAL
PROPOSED SIGNAL
AIRCRAFT AT GATE
AIRCRAFT RON
AIRCRAFT MOVEMENT AREA
EXISTING BUILDING TO REMAIN
HEADHOUSE
PARKING
CENTRAL UTILITY PLANT
CONCOURSE
GROUND TRANSPORTATION CENTER
COURTYARD / GREENSPACE
CONRAC
FUTURE PROPERTY ACQUISITION
EXISTING AIRPORT PROPERTY
0
200'
400'
GRAPHIC SCALE IN FEET

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1. Central pier expands to the north.
2. RON parking converts to gate parking.

Aircraft Parking Count: 26 (28 Narrow Body)

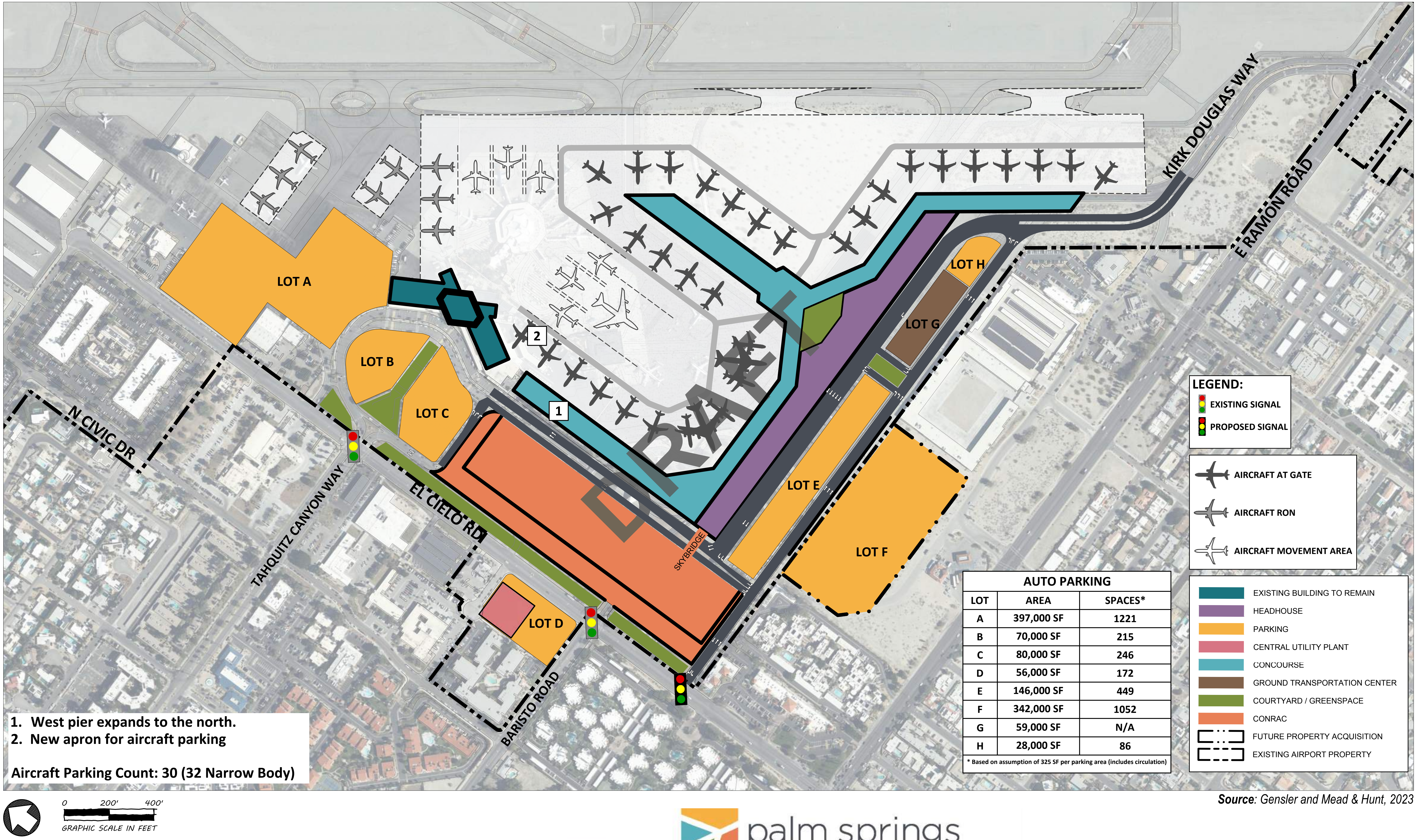
AUTO PARKING

LOT	AREA	SPACES*
A	397,000 SF	1221
B	70,000 SF	215
C	80,000 SF	246
D	56,000 SF	172
E	146,000 SF	449
F	342,000 SF	1052
G	59,000 SF	N/A
H	28,000 SF	86

* Based on assumption of 325 SF per parking area (includes circulation)

Source: Gensler and Mead & Hunt, 2023

Figure 4-17: Alternative 3 Phase 4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LEGEND:
EXISTING SIGNAL
PROPOSED SIGNAL
AIRCRAFT AT GATE
AIRCRAFT RON
AIRCRAFT MOVEMENT AREA
EXISTING BUILDING TO REMAIN
HEADHOUSE
PARKING
CENTRAL UTILITY PLANT
CONCOURSE
GROUND TRANSPORTATION CENTER
COURTYARD / GREENSPACE
CONRAC
FUTURE PROPERTY ACQUISITION
EXISTING AIRPORT PROPERTY
0
200'
400'
GRAPHIC SCALE IN FEET

1. West pier expands to the north.
2. New apron for aircraft parking

Aircraft Parking Count: 30 (32 Narrow Body)

AUTO PARKING

LOT	AREA	SPACES*
A	397,000 SF	1221
B	70,000 SF	215
C	80,000 SF	246
D	56,000 SF	172
E	146,000 SF	449
F	342,000 SF	1052
G	59,000 SF	N/A
H	28,000 SF	86

* Based on assumption of 325 SF per parking area (includes circulation)

Source: Gensler and Mead & Hunt, 2023

Refined Alternatives Summary

This chapter presented refined versions of the Working Group's preferred alternatives with the goal of providing additional analysis to the Working Group, Airport Staff and the City of Palm Springs that would allow for an informed decision on selection of a preferred alternative. The focus of the additional analysis was on phasing of each alternative and planning level cost estimates for each phase. **Figure 4-18** provides a comparative summary of both alternatives. **Figure 4-19** through **Figure 4-23** provide terminal area renderings for Alternative 1A and Alternative 3.

Alternative 1A was selected as the preferred terminal area alternative in early 2024.

ADDITIONAL ALTERNATIVE ANALYSIS

In early 2024, the Master Plan scope of work was amended to include additional analysis regarding Consolidated Rental Car (CONRAC) alternatives and public transportation and connectivity alternatives.

CONRAC Alternatives

Two additional CONRAC site alternatives were evaluated and compared to the proposed CONRAC site for Alternative 1A (preferred alternative). The alternatives evaluated included a site approximately 0.4 miles south of the terminal and a site approximately 1 ½ miles northwest of the terminal. CONRAC alternative evaluation is summarized in **Appendix C**. The proposed CONRAC site adjacent to the north end of the terminal was retained as the preferred CONRAC site.

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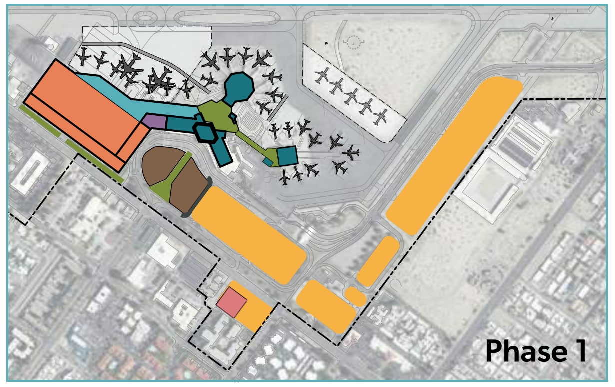
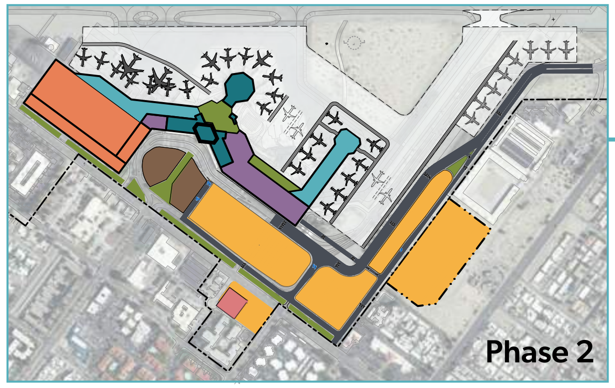
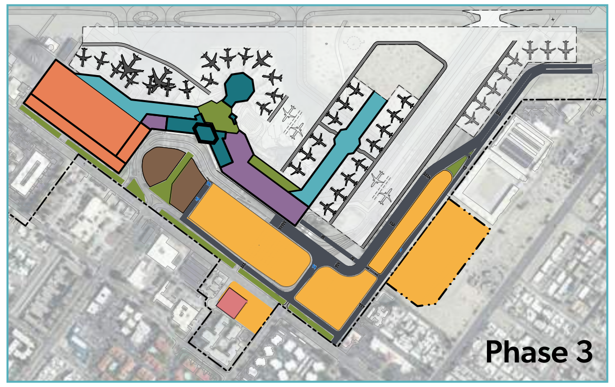
Public Transportation and Connectivity Alternatives

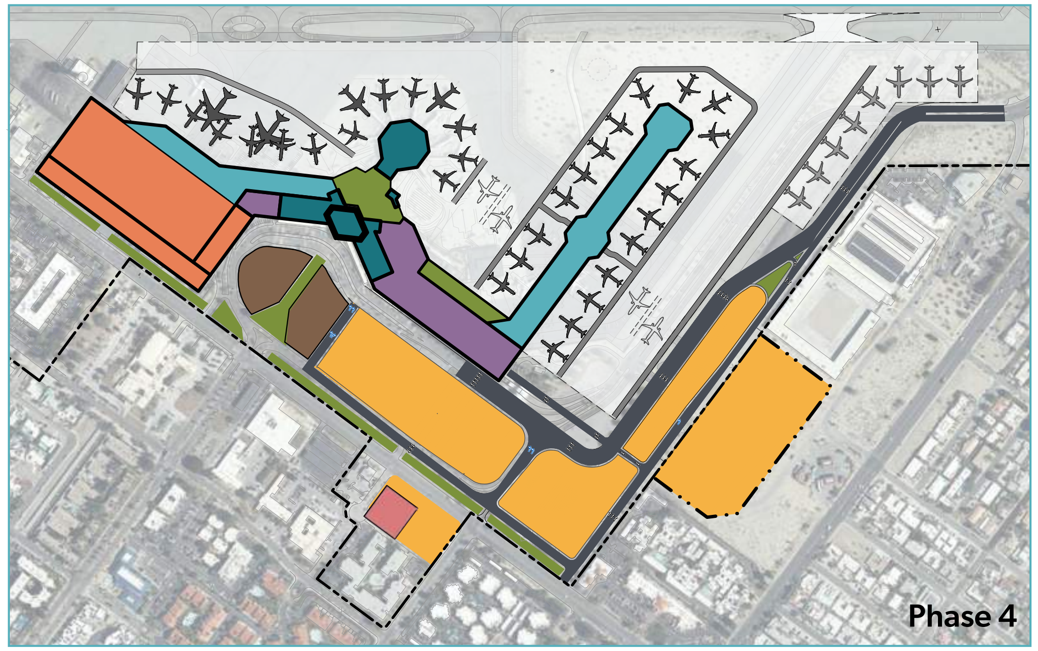
An inventory and assessment of existing public transportation and connectivity options to PSP is provided in **Appendix D**. The appendix also provides information on proposed transportation projects in the region and options to improve connectivity to the Airport.

Figure 4-18: Alternatives Summary



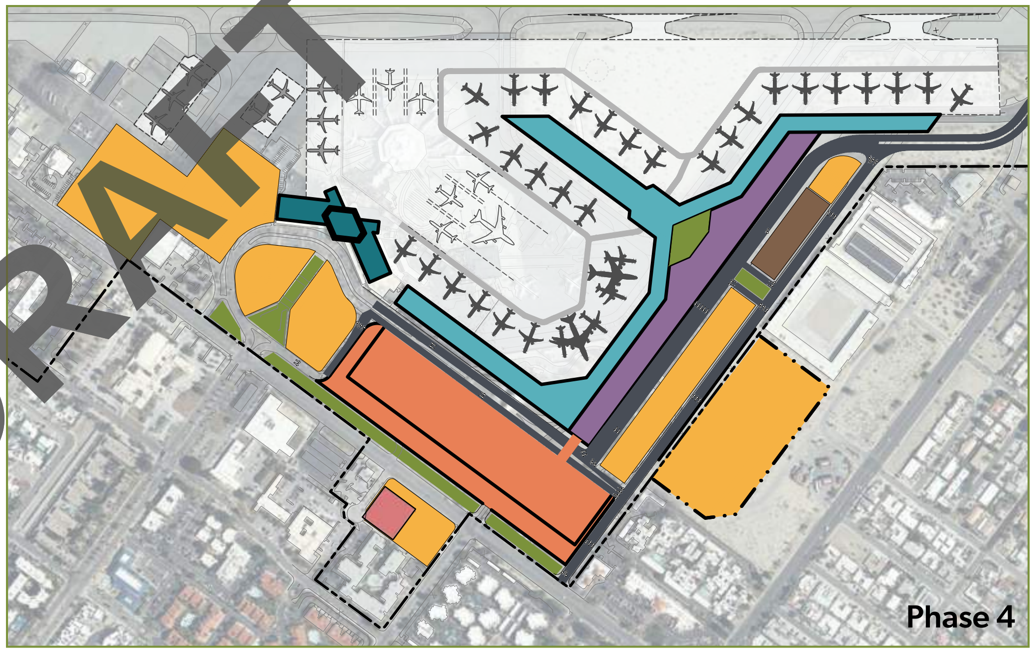


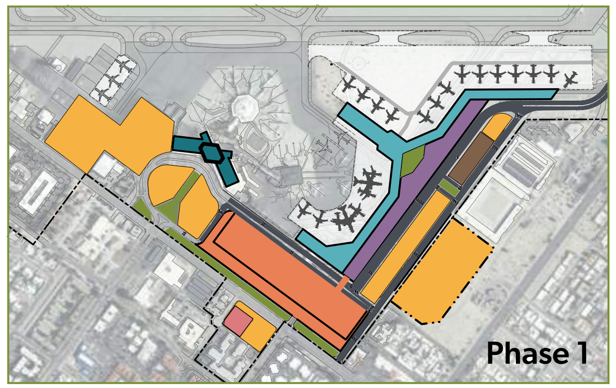


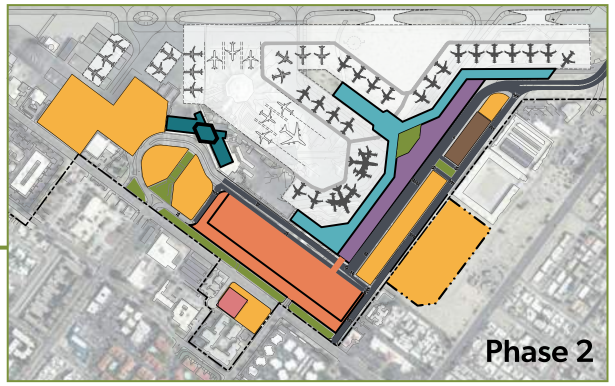


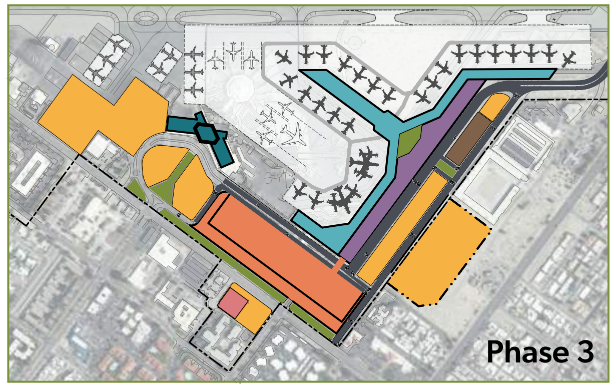
Alternative 1A

Alternative 3









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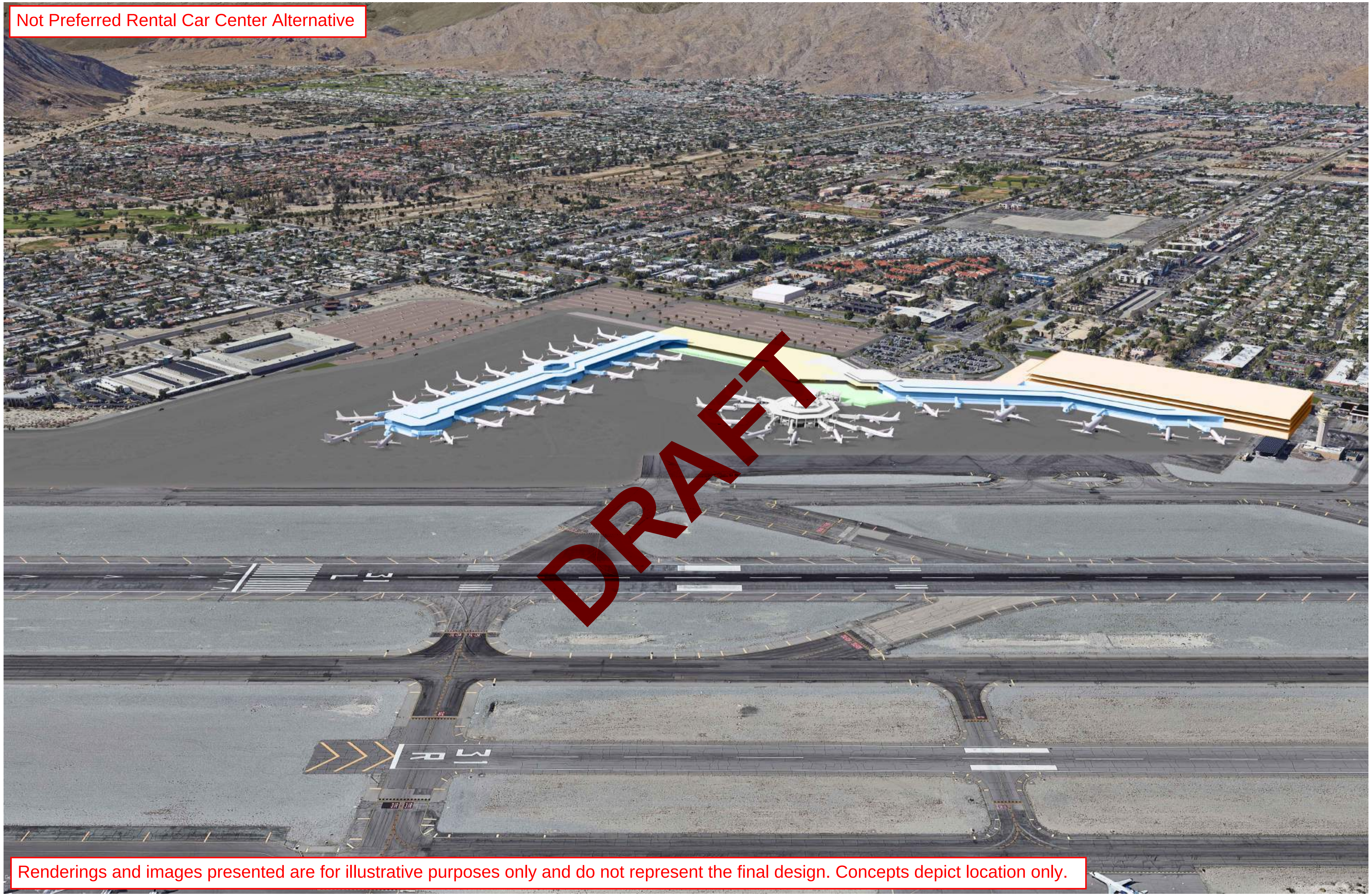
Alternative 1A				
Consideration	Phase 1	Phase 2	Phase 3	Phase 4
Phase ROM Cost	$900M	$1.1B	$100M	$100M
Running ROM Cost Total	*$900M*	*$2B*	*$2.1B*	*$2.2B*
Gate Positions (Narrowbody)	25	24	29	34
RON Positions	5	8	8	8
Courtyard s.f. (secure side)	61,000	88,000	88,000	88,000
Surface Parking Spaces	2,778	3,194	3,194	3,194

Planning Activity Level Requirements	PAL 1	PAL 2	PAL 3	PAL 4
Gate Positions (Narrowbody)	23	24	27	32
Public & Employee Parking Spaces	2,063	2,450	2,756	3,321

Alternative 3				
Consideration	Phase 1	Phase 2	Phase 3	Phase 4
Phase ROM Cost	$2.2B	$400M	$100M	$100M
Running ROM Cost Total	*$2.2B*	*$2.6B*	*$2.7B*	*$2.8B*
Gate Positions (Narrowbody)	20	24	28	32
RON Positions	3	11	8	8
Courtyard s.f. (secure side)	26,000	26,000	26,000	26,000
Surface Parking Spaces	3,441	3,441	3,441	3,441

Figure 4-19: Alternative 1A Northeast View


Not Preferred Rental Car Center Alternative

Renderings and images presented are for illustrative purposes only and do not represent the final design. Concepts depict location only.

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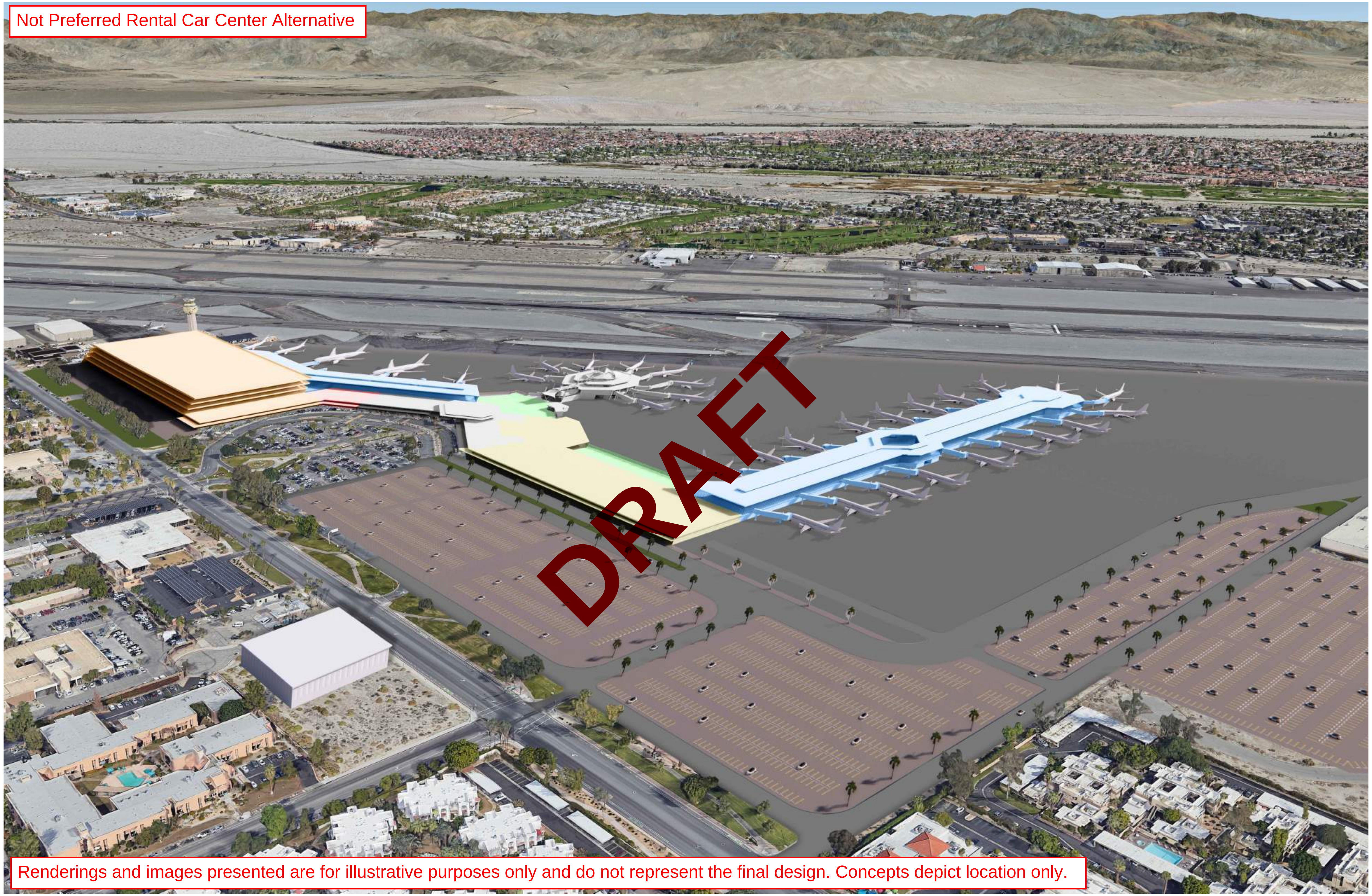
***Source**: Gensler, 2023*

Figure 4-20: Alternative 1A Southwest View



Not Preferred Rental Car Center Alternative
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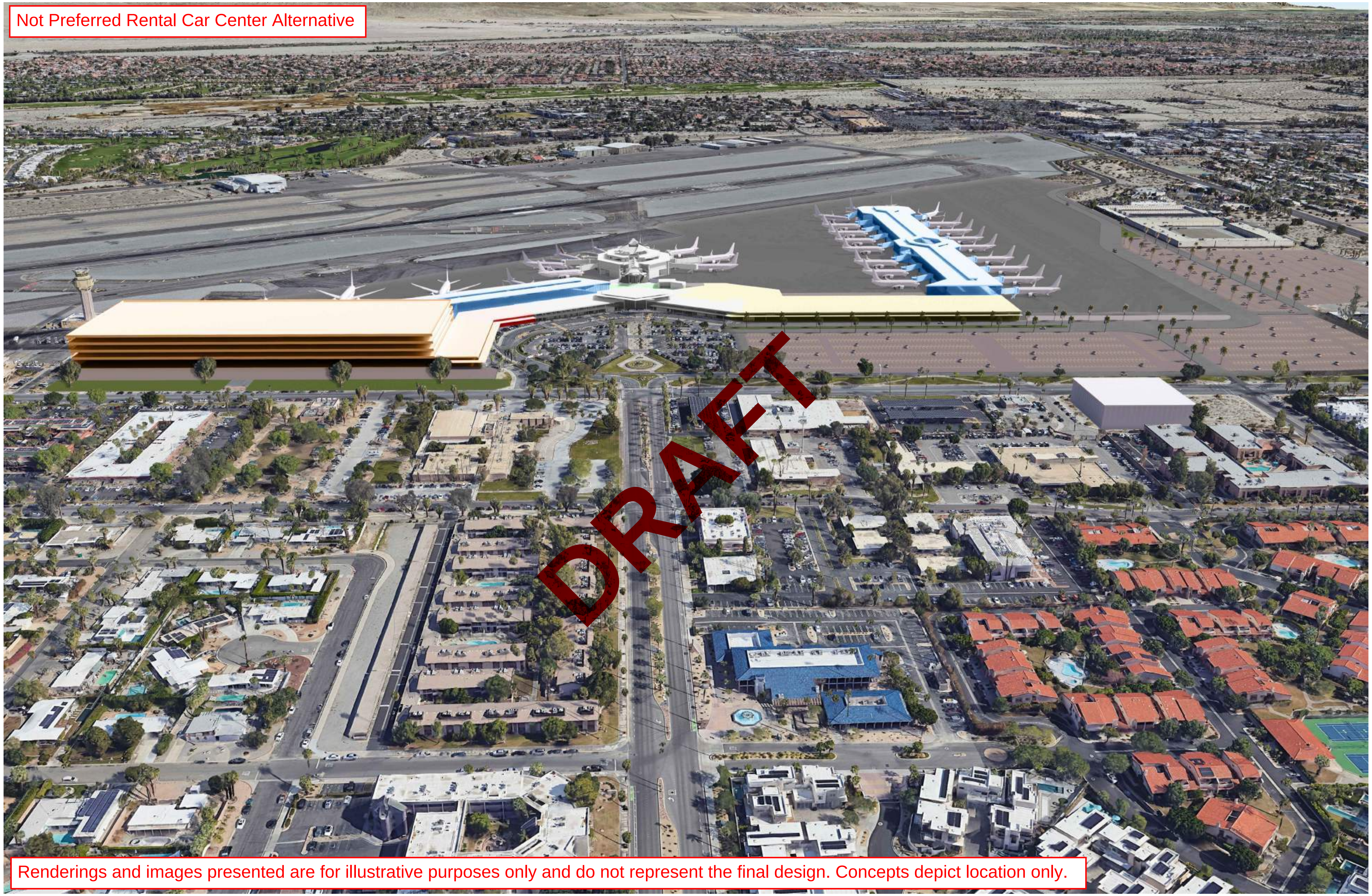
Renderings and images presented are for illustrative purposes only and do not represent the final design. Concepts depict location only.

***Source**: Gensler, 2023*

Figure 4-21: Alternative 1A Tahquitz View



Not Preferred Rental Car Center Alternative

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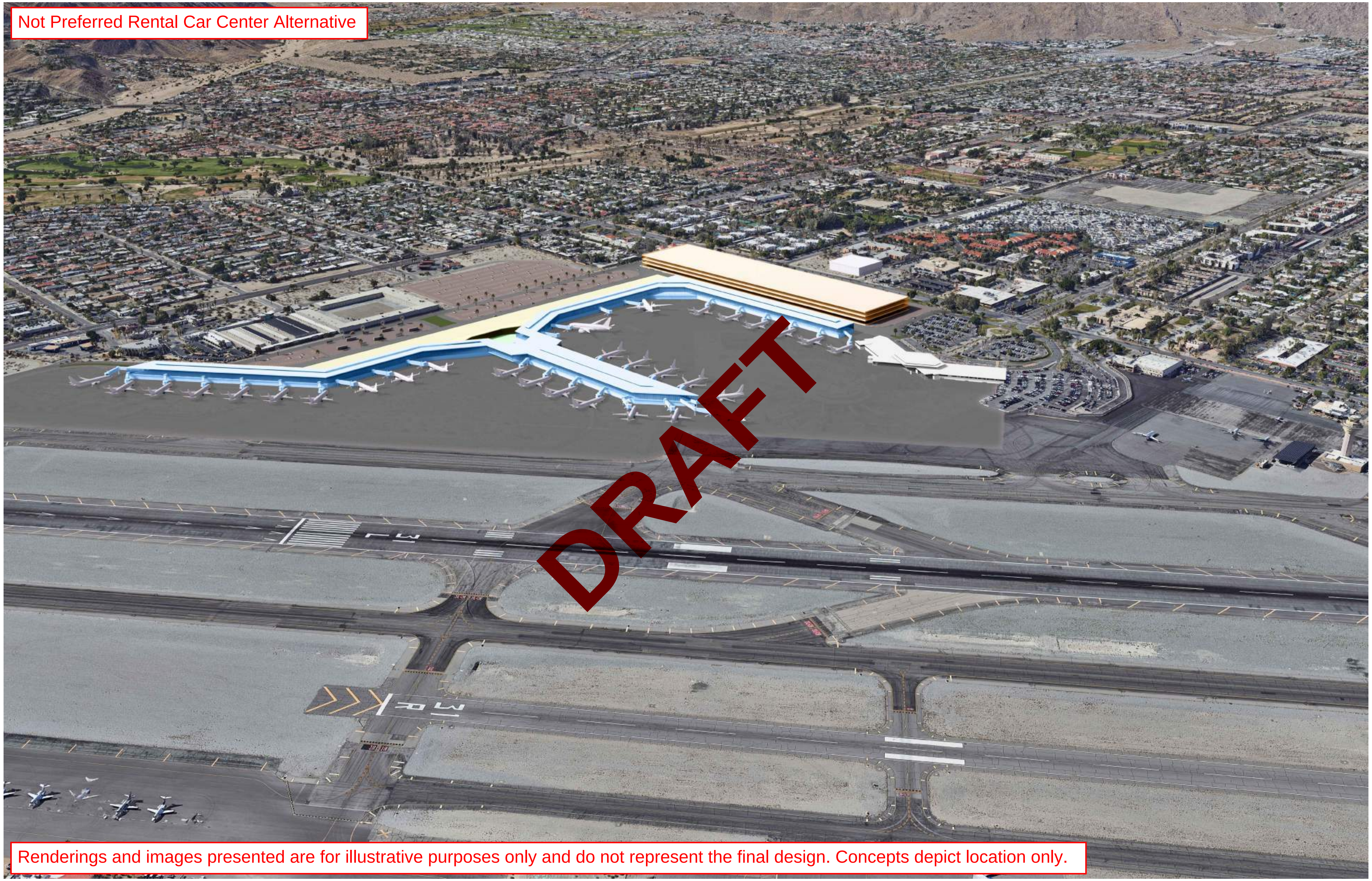
Source: *Gensler, 2023*

Figure 4-22: Alternative 3 Northeast View


Not Preferred Rental Car Center Alternative
Renderings and images presented are for illustrative purposes only and do not represent the final design. Concepts depict location only.

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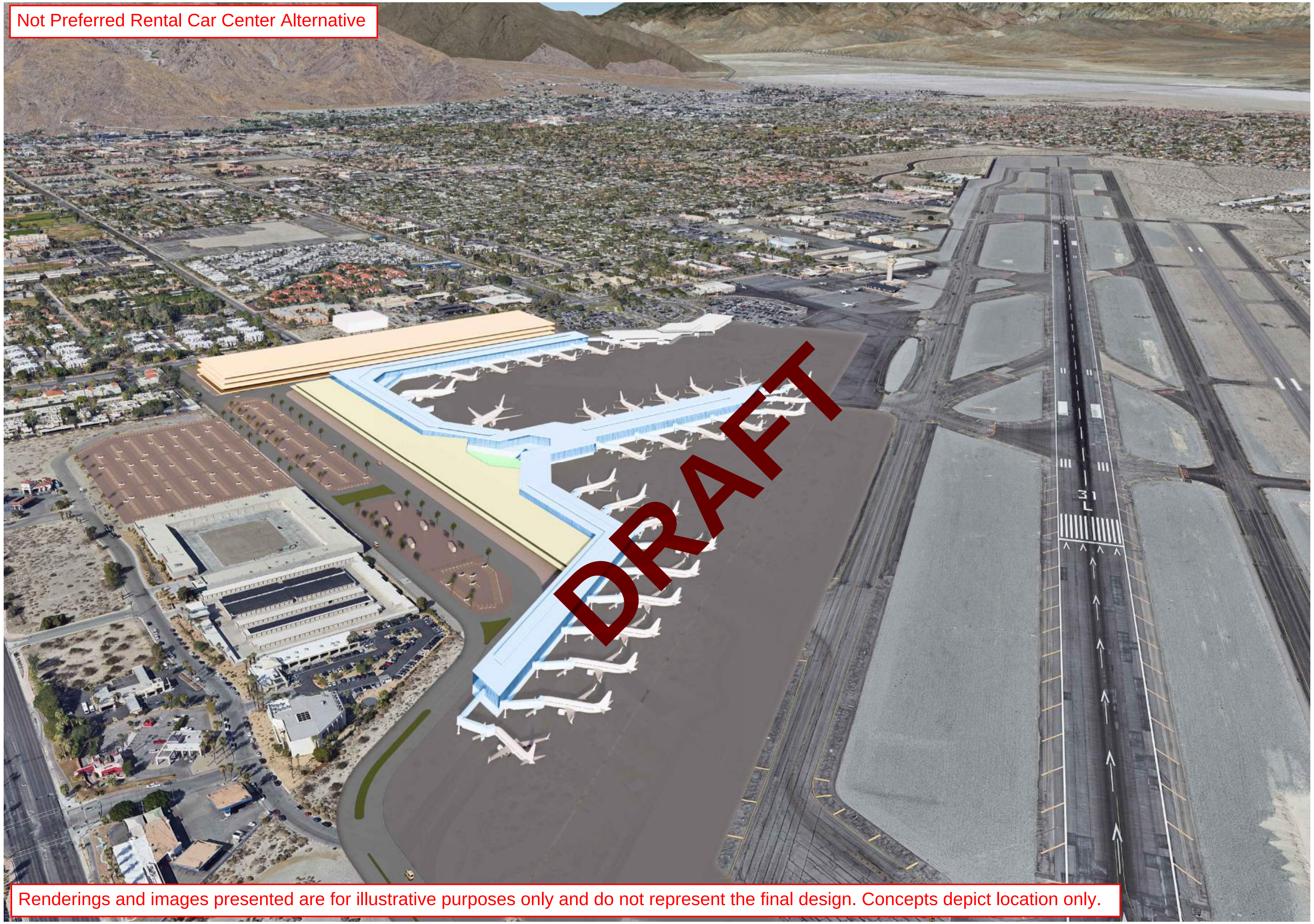
***Source**: Gensler, 2023*

Figure 4-23: Alternative 3 Southeast View


Not Preferred Rental Car Center Alternative
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Renderings and images presented are for illustrative purposes only and do not represent the final design. Concepts depict location only.

***Source**: Gensler, 2023*

EQUITY AND SUSTAINABILITY CONSIDERATIONS

The design of an effective, efficient, and sustainable terminal is the ultimate goal. To create a sustainable airport terminal, a range of factors pertaining to land use, transportation, stakeholder relations, and resilience should be considered in the design process. The objective of these considerations are to develop the terminal improvements in phases that seamlessly integrate the surrounding environment, support the well-being of stakeholders, and are resilient to challenges.

Building a terminal that incorporates equity and sustainability creates a space that attempts to address the needs of all stakeholders while minimizing environmental impacts. The following sections explain equity and sustainability factors that were taken into consideration when choosing the refined alternatives.

Equity Factors:

- **Accessibility for All:** Ensures the terminal is accessible to individuals of all abilities. Incorporates ramps, elevators, tactile indicators, limits walking distance and other features that make navigation easy for people with disabilities.
- **Inclusive Design:** Creates spaces that are inclusive of diverse cultural backgrounds and age groups. Considers cultural sensitivities, multilingual signage, and spaces that accommodate families, children, and elderly travelers.
- **Economic Accessibility:** Ensures there are services and amenities that cater to different income levels. Offers affordable transportation options, varied dining choices, and amenities that can be enjoyed by all passengers.
- **Community Engagement:** Involves local communities and stakeholders in the design process. Seeks input from residents, businesses, and community organizations to ensure the terminal's design reflects their needs and concerns.
- **Employment Opportunities:** Considers how the terminal improvements can create job opportunities for the local community, especially in marginalized neighborhoods. Collaborates with community organizations to provide training and employment initiatives.
- **Environmental Justice:** Assesses the potential environmental impacts of the terminal on surrounding communities, particularly those that are historically disadvantaged. Mitigates negative impacts and ensures that benefits are distributed equitably.

Consider a terminal design that will lessen confusion for passengers during construction and create a streamlined experience.

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Sustainability Factors:

- **Energy Efficiency:** Prioritizes energy-efficient design, utilizing advanced lighting, heating, cooling, and ventilation systems. Implements sensors and automation to optimize energy use.
- **Renewable Energy:** Integrates renewable energy sources like solar panels to power the terminal. Utilizes clean energy technologies to reduce reliance on fossil fuels.
- **Water Management:** Implements water-efficient fixtures and systems to minimize water consumption. Incorporates rainwater harvesting and greywater recycling to further conserve water resources.
- **Materials Selection:** Chooses sustainable and eco-friendly materials with a low environmental impact. Prioritizes materials that are recycled, recyclable, or biodegradable.
- **Waste Management:** Designs include waste disposal and recycling facilities that encourage proper waste segregation. Promotes waste reduction through initiatives like composting and recycling programs.
- **Transportation Alternatives:** Improves access to public transportation and considers on-site electric vehicle charging stations. Encourages travelers to use low-carbon transportation options.
- **Biodiversity:** Incorporates green spaces and native vegetation into the terminal design to support local biodiversity. Uses landscaping techniques that require minimal water and maintenance.
- **Resilience to Climate Change:** The terminal is designed to withstand the impacts of climate change and extreme weather events.
- **Lifecycle Assessment:** Considers the entire lifecycle of the terminal, from construction to operation and eventual decommissioning. Minimizes environmental impacts at every stage.
- **Certification and Standards:** Strives for sustainability certifications such as LEED (Leadership in Energy and Environmental Design) or BREEAM (Building Research Establishment Environmental Assessment Method) to ensure that the terminal meets internationally recognized sustainability criteria.

Lifecycle Assessment: Contemplate a terminal design that creates the most opportunities for the longevity and sustainability of the historic Wexler Terminal.

The aspiration for a sustainable airport terminal design is a holistic one. It encompasses social equity, energy efficiency, water conservation, waste management, stakeholder engagement, and resilience as well as environmental and financial uncertainties. Through a careful synthesis of these elements, PSP endeavors to create a terminal that not only meets the needs of its users but also serves as a model of sustainable design for the broader aviation industry and the entire Coachella Valley.

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EPILOGUE

This Comprehensive Airport Master Plan began in the spring of 2023. Throughout the course of 2023 and early 2024, the planning team worked with Airport staff as well as the Palm Springs community and airport stakeholders to develop a 20-year plan that would meet the needs for the Airport. In May of 2024, the planning team presented the recommendations from this Comprehensive Airport Master Plan to City Council. City Council approved all recommendations apart from the location of the consolidated rental car center. City Council requested the planning team complete additional analysis on the consolidated rental car center. This was done through the following two amendments:

- Amendment 1: This amendment considered an on-airport property versus an off-airport property alternatives for the consolidated rental car center which can be found in Appendix C. This amendment also considered public transportation connectivity analysis that can be found in Appendix D.
- Amendment 2: This amendment considered the height of the consolidated rental car center and traffic impacts to the alternative locations for the consolidated rental car center that can be found in Appendix E. This amendment also includes additional stakeholder outreach that can be found in Appendix F.

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Chapter 5 – Airfield and Landside Facility Requirements

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INTRODUCTION

In efforts to quantify future facility needs, it is necessary to translate the forecasted aviation activity into specific physical requirements for Palm Springs International Airport (PSP or the Airport). Therefore, this chapter analyzes the actual types and quantities of facilities and/or the required improvements to existing facilities needed to accommodate the projected demand safely and efficiently. For those components determined to be deficient, the type, size, or number of facilities required to meet the demand is identified. Two separate analyses are included: those requirements related to airside facilities, and those requirements related to landside facilities.

This analysis uses the forecasts presented in the **Aviation Activity Forecast** chapter for establishing future development at the Airport. This is not intended to dismiss the possibility that either accelerated growth or consistently higher or lower levels of activity may occur. Aviation activity levels should be monitored for consistency with the forecasts. In addition, an airport's runway and taxiway system should be designed in accordance with the specified Runway Design Code (RDC) based on the critical aircraft. The Federal Aviation Administration (FAA) defines critical aircraft as an aircraft or group of aircraft within a RDC that have a minimum of 500 annual operations at an airport. Based on the critical aircraft analysis conducted for this Master Plan, the existing and future critical aircraft for each runway facility at PSP is designated as follows:

Runway 13R/31L – RDC D-III-5000

- Boeing 737-900 (Existing)
- Boeing 737 MAX 9 (Future)

Runway 13L/31R – RDC B-II (Small)-VIS

- Beechcraft King Air (Existing)
- Beechcraft King Air and Cessna Citation CJ2 (Future)

AIRFIELD CAPACITY

Airfield capacity refers to the maximum number of aircraft operations (takeoffs and landings) that can be conducted in a given period of time without causing delays. The FAA Advisory Circular (AC) 150/5060-5, *Airport Capacity and Delay*, provides the methodology used to measure airfield capacity, which can be defined as:

- **Hourly Capacity of Runways.** The maximum number of aircraft that can be accommodated under conditions of continuous demand during a one-hour period.
- **Annual Service Volume (ASV).** A reasonable estimate of an airport's annual capacity (i.e., level of annual aircraft operations that will result in an average annual aircraft delay of approximately one to four minutes).

The AC indicates that several factors can impact airfield capacity including, but not limited to:

- **Runway Use Configuration.** The number, location, and orientation of the active runway(s), the type and direction of operations, and the flight rules in effect at a particular time. PSP has two parallel runways that are spaced 700 feet apart allowing simultaneous Visual Flight Rules (VFR) operations.
- **Ceiling and Visibility.** Ceiling refers to the cloud height above ground level while visibility refers to the distance that can be seen ahead. Both depend on weather conditions that will dictate whether a pilot can fly under VFR or Instrument Flight Rules (IFR):
    - VFR – minimum ceiling of 1,000 feet and minimum visibility of three statute miles.
    - IFR – ceiling less than 1,000 feet and/or visibility less than three statute miles.
- **Mix Index.** Mix index is a mathematical expression that calculates the percentage of Class C aircraft plus three times the percentage of Class D aircraft that operate at the Airport. The mix index for PSP is 122, which was calculated using the latest FAA Traffic Flow Management System Counts (TFMSC) data.
    - *Class C aircraft* refers to large jet aircraft weighing more than 41,000 and up to 255,000 pounds.
    - *Class D aircraft* refers to large non-jet aircraft and small regional jets weighing more than 41,000 and up to 255,000 pounds.
- **Taxiways.** The parallel taxiways, entrance/exit taxiway, and crossing taxiways can impact capacity if an arriving or departing stream of aircraft must cross an active runway. Both runways at PSP have parallel taxiways on each side of the runway with several entrance, exit, and crossing taxiways along the length of the runway.

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For the purposes of this Master Plan, airfield capacity was analyzed at a high level focusing on the airfield capacity range throughout the long-term planning horizon. AC 150/5060-5 provides a method to determine the long-term ASV based on the runway-use configuration. PSP has two parallel runways that are spaced 700 feet apart allowing simultaneous VFR operations. **Table 5-1** summarizes the ASV range for an airfield that has two parallel runways that are spaced between 700 and 2,499 feet apart.

Table 5-1: Airfield Capacity

Runway-Use Configuration Number	Mix Index (C+3D)	Hourly Capacity Operations per Hour		ASV
		VFR	IFR	
2	0 to 20	197	59	355,000
	21 to 50	145	57	275,000
	51 to 80	121	56	260,000
	81 to 120	105	59	285,000
	121 to 180	94	60	340,000

Sources: *Mead & Hunt, 2023; AC 150/5060-5 Figure 2-1 Capacity and ASV for long range planning.*

Airfield Capacity Conclusion

The ASV for PSP's airfield range is 340,000 operations per year. It is important that an airfield can meet forecasted operations to maintain a safe and efficient system. The **Aviation Activity Forecast** chapter forecasts PSP operations to increase to an estimated 88,687 operations which is approximately 26 percent of the ASV, by the end of the 20-year planning horizon. Therefore, the existing airfield is anticipated to be adequate for PSP's long-term needs and additional evaluation of capacity will not be explored further.

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AIRFIELD FACILITY AND AIRSPACE FACILITY REQUIREMENTS

To identify facility needs, it is necessary to translate the forecast aviation activity into specific types and quantities. This section addresses the actual physical facilities and/or improvements to existing facilities needed to accommodate safely and efficiently the projected demand that will be placed on the Airport.

Airfield Design Standards

The types of aircraft that currently operate at PSP and those projected to use the facility in the future have an impact on the planning and design of airport facilities. This knowledge assists in the selection of FAA-specified design standards for the Airport, which include runway and taxiway dimensional requirements, runway length, and pavement strength. These standards are based on the critical aircraft that currently use the Airport or that are projected to use the Airport in the future. According to AC 150/5300-13B, *Airport Design*; the first step in defining a runway's design geometry is to determine the RDC. The critical aircraft can take the form of one aircraft or a composite aircraft representing a collection of aircraft classified by three parameters: Aircraft Approach Category (AAC), Airplane Design Group (ADG), and Taxiway Design Group (TDG). The critical aircraft for each of the runways at PSP are discussed further in the following subsections and are used to evaluate each runway's ability to meet current FAA design standards.

Runway 13R/31L Design Standards

Runway 13R/31L is the primary runway at PSP and the only runway that serves air carrier aircraft. The FAA approved Critical Aircraft Memo for this runway was prepared in May of 2023. The memo identified the Boeing 737 MAX 9 as the future critical aircraft. As documented in the **Inventory of Existing Conditions** chapter, Runway 13R/31L provides an instrument approach procedure (IAP) visibility minimum of 1 mile (i.e., a 5,000 foot runway visual range). Therefore, the RDC for Runway 13R/31L is designated D-III-5000. **Table 5-2** evaluates the existing runway's ability to meet the specified FAA design standards and **Figure 5-1** through **Figure 5-3** depict the existing runway design standards.

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Table 5-2: Runway 13R/31L Design Standards Matrix – RDC D-III-5000

Item	Existing Dimension	FAA Criteria	Standard Met
Runway Design			
Runway Width	150’	100’	Yes
Shoulder Width	40’	20’	Yes
Blast Pad Width	230’	140’	Yes
Blast Pad Length	200’	200’	Yes
Crosswind Component	16 knots	16 knots	Yes
Runway Protection			
Runway Safety Area (RSA)			
Length beyond departure end (Runway 13R)	1,000’	1,000‘	Yes[1]
Length beyond departure end (Runway 31L)	1,000’	1,000’	Yes
Length prior to threshold (Runway 13R)	600’	600’	Yes
Length prior to threshold (Runway 31L)	600’	600’	Yes
Width (both runways)	500’	500’	Yes
Runway Object Free Area (ROFA)			
Length beyond departure end (Runway 13R)	**503’**	1,000’	**No**[2]
Length beyond departure end (Runway 31L)	1,000’	1,000’	Yes
Length prior to threshold (Runway 13R)	600’	600’	Yes
Length prior to threshold (Runway 31L)	600’	600’	Yes
Width (both runways)	800’	800’	Yes
Runway Obstacle Free Zone (ROFZ) – Both Runway Ends			
Length	200’	200’	Yes
Width	400’	400’	Yes
Precision Obstacle Free Zone (POFZ) – Both Runway Ends			
Length	N/A	N/A	N/A
Width	N/A	N/A	N/A
Runway Separation			
Runway centerline to:			
Parallel runway centerline	700’	700’[3]	Yes
Holding position	250’	250’	Yes
Parallel taxiway/taxilane centerline (Taxiway W between A & G)	500’	400’	Yes
Parallel taxiway/taxilane centerline (Taxiway W between G & K)	525’	400’	Yes
Parallel taxiway/taxilane centerline (Taxiway W between K & J)	400’	400’	Yes
Parallel taxiway/taxilane centerline (Taxiway C)	400’	400’	Yes
Aircraft parking area (east)	N/A	N/A	N/A
Aircraft parking area (west)	>485.5’ – 664.5’[4]	485.5’ – 664.5’[4]	Yes

Sources: Mead & Hunt, 2023; FAA Advisory Circular 150/5300-13B.

Notes: [1] *The Runway 13R RSA overrun length criteria is met with the application of declared distances standards (i.e., reduces both the ASDA and LDA lengths for Runway 13R).*

[2] *The length beyond runway end for Runway 13R’s ROFA does not meet standards because of the existing fence.*

[3] *Specified separation requirements for simultaneous takeoff and landings under VFR conditions.*

[4] *Aircraft parking west = runway/taxiway separation + TOFA/2 + TLOFA/2 = 500 + (400/2) + (171/2) = 664.5.*

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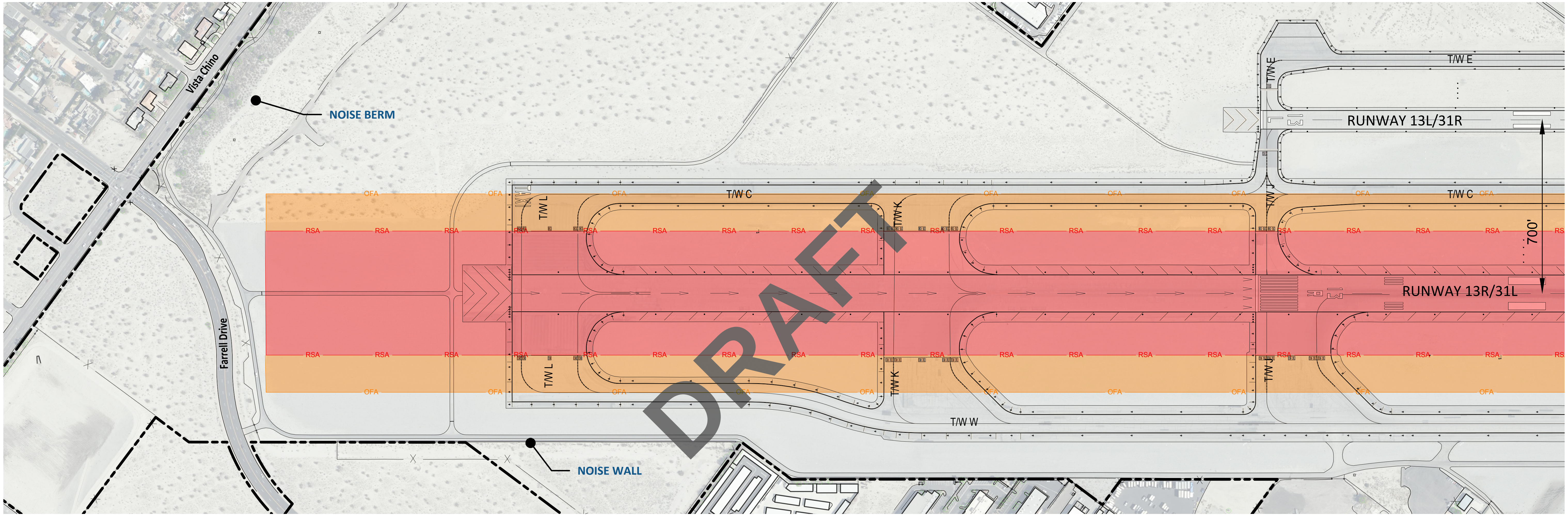
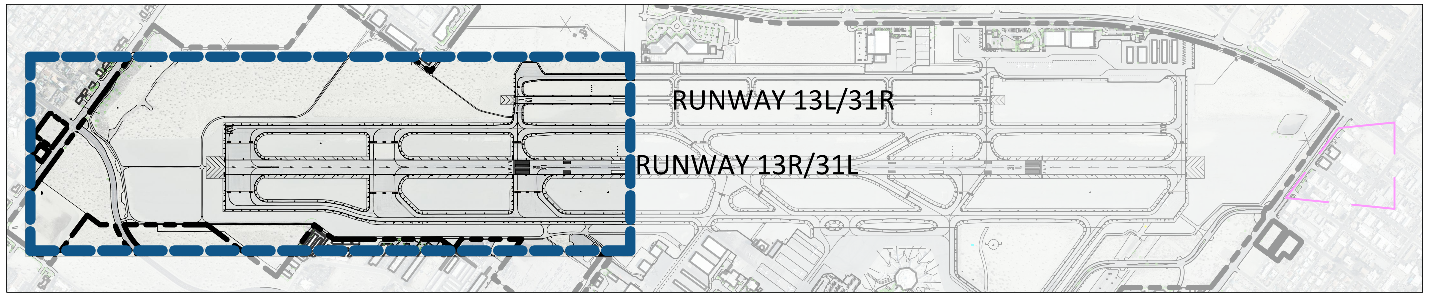
Figure 5-1: Runway 13R/31L Design Standards D-III-5000 - North Detail


Vista Chino
NOISE BERM
Farrell Drive
NOISE WALL
T/W E
T/W E
RUNWAY 13L/31R
T/W C
T/W C
T/W L
T/W L
T/W K
T/W K
T/W J
T/W J
RUNWAY 13R/31L
700'
T/W W
OFA
RSA
DRAFT

0
200'
400'
GRAPHIC SCALE IN FEET

Legend

🟥 Runway Safety Area
🟧 Runway Object Free Area
---- Airport Property Line

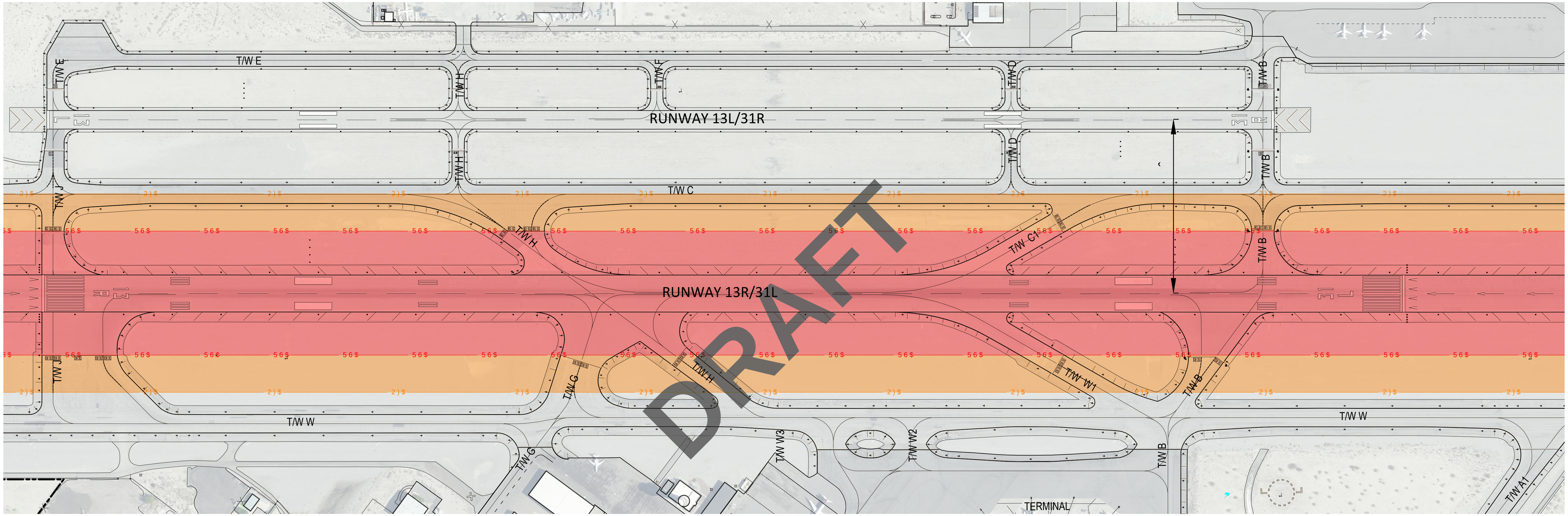

RUNWAY 13L/31R
RUNWAY 13R/31L

Keymap

0
1000'
2000'
GRAPHIC SCALE IN FEET

CRITERIA MET/NO NON-STANDARD CONDITIONS

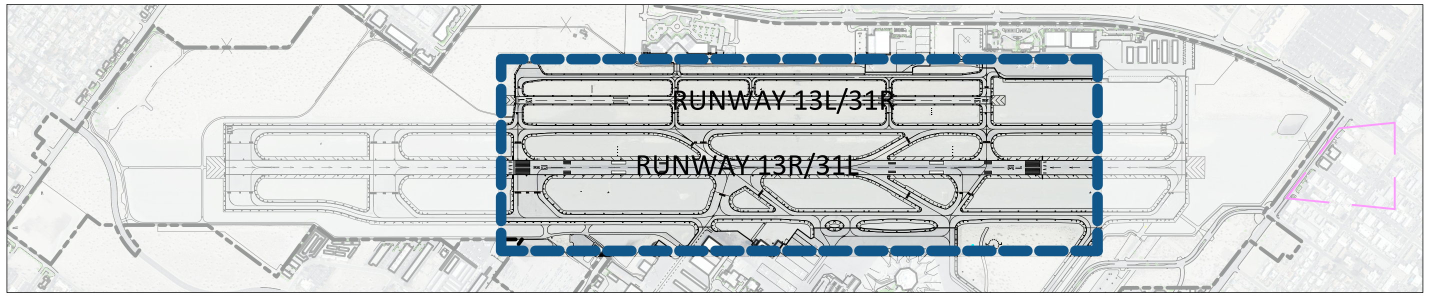
Figure 5-2: Runway 13R/31L Design Standards D-III-5000 - Central Detail


T/W E
T/W E
T/W H
T/W F
T/W D
T/W B
RUNWAY 13L/31R
T/W H
T/W D
T/W B
T/W J
T/W C
T/W H
T/W C1
T/W B
RUNWAY 13R/31L
DRAFT
T/W J
T/W G
T/W H
T/W W1
T/W B
T/W W
T/W W
T/W G
T/W W3
T/W W2
T/W B
TERMINAL
T/W A1

0 200' 400'
GRAPHIC SCALE IN FEET

Legend

🟥 Runway Safety Area
🟧 Runway Object Free Area
- - - Airport Property Line

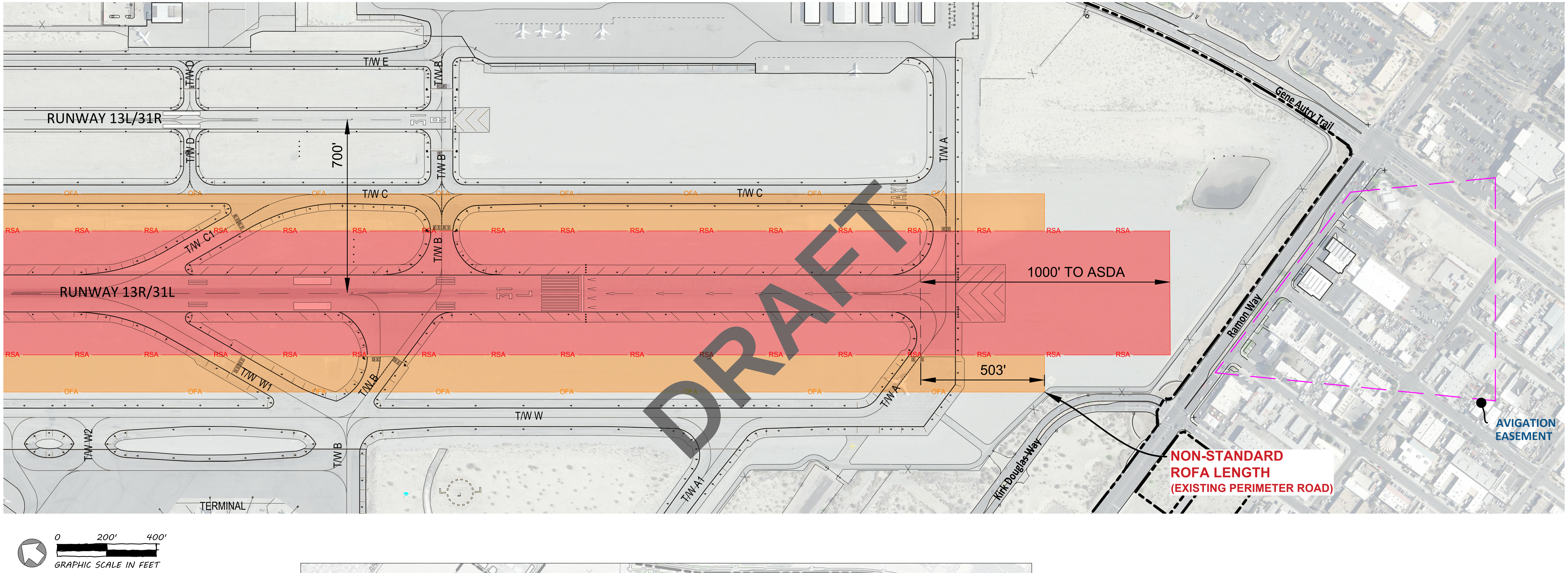

RUNWAY 13L/31R
RUNWAY 13R/31L

Keymap

0 1000' 2000'
GRAPHIC SCALE IN FEET

CRITERIA MET/NO NON-STANDARD CONDITIONS

Figure 5-3: Runway 13R/31L Design Standards D-III-5,000 - South Detail


RUNWAY 13L/31R
RUNWAY 13R/31L
T/W E
T/W D
T/W B
T/W C
T/W C1
T/W W1
T/W W
T/W W2
T/W A
T/W A1
700'
1000' TO ASDA
503'
RSA
OFA
TERMINAL
Gene Autry Trail
Ramon Way
Kirk Douglas Way
AVIGATION EASEMENT
NON-STANDARD ROFA LENGTH (EXISTING PERIMETER ROAD)
0 200' 400'
GRAPHIC SCALE IN FEET

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Legend

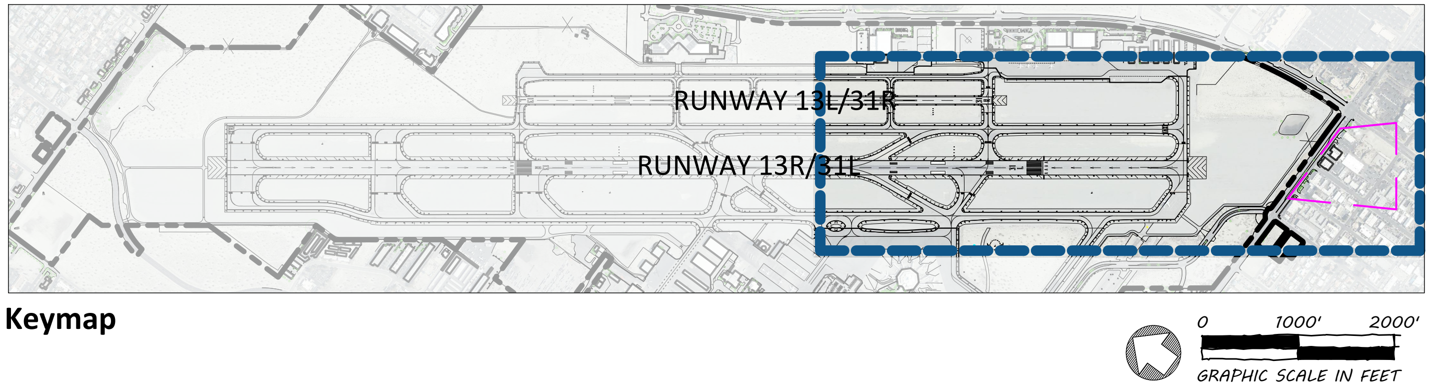
🟥 Runway Safety Area

🟧 Runway Object Free Area

-·-·- Airport Property Line

NOTES:

1. ASDA- Accelerate Stop Distance Available
2. For this runway end, the length beyond departure end begins at the end of the ASDA rather than the physical end of runway


RUNWAY 13L/31R
RUNWAY 13R/31L
0 1000' 2000'
GRAPHIC SCALE IN FEET

Keymap

Runway 13R/31L Design Standards Conclusion

Runway 13R/31L meets the majority of FAA D-III-5000 design standards with the notable exception of the Runway 13R Runway Object Free Area (ROFA) length beyond runway end.

The 2010 FAA approved PSP Airport Layout Plan (ALP) listed both the Runway Safety Area (RSA) and ROFA as "Deviations From FAA Airport Design Standards." However, as noted in Table 5-2 above, the Runway 13R overrun RSA is currently being mitigated with the application of declared distances criteria. Ultimately, the ALP identified the future relocation of the Runway 31L end to mitigate the existing non-standard ROFA. This previous recommendation for the mitigation of the non-standard ROFA will be reexamined in the context of a comprehensive review of the overall airfield layout configuration, as an element of the **Alternatives Analysis** chapter, in this update of the PSP Master Plan.

Runway 13L/31R Design Standards

Runway 13L/31R is the shorter parallel runway at PSP, providing only visual approaches, which is utilized by smaller general aviation aircraft. Based upon the existing and projected operational capacity of the Airport's primary runway, Runway 13L/31R is classified by the FAA as an "Additional Runway," which is not eligible for federal funding participation of future maintenance or development projects. Thus, the use of local Sponsor funding sources is required to maintain this facility.

Currently, the Beechcraft King Air is identified as the critical aircraft for this runway on the ALP. The latest FAA TFMSC data shows that a combination of the Beechcraft King Air and the Cessna Citation CJ2 is the appropriate critical aircraft for this runway. Based upon the specified wingspan and approach speed of these aircraft, along with the runway's visual approaches, the RDC of the runway is designated at B-II (Small)-VIS. **Table 5-3** evaluates the runway's ability to meet these FAA design standards and is depicted in **Figure 5-3**.

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Table 5-3: Runway 13L/31R Design Standards Matrix – RDC B-II (Small)-VIS

Item	Existing Dimension	FAA Criteria	Standard Met
Runway Design			
Runway Width	75’	75’	Yes
Shoulder Width	10’	10’	Yes
Blast Pad Width	95’	95’	Yes
Blast Pad Length	150’	150’	Yes
Crosswind Component	13 knots	13 knots	Yes
Runway Protection			
Runway Safety Area (RSA) – Both Runway Ends			
Length beyond departure end	300’	300’	Yes
Length prior to threshold	300’	300’	Yes
Width	150’	150’	Yes
Runway Object Free Area (ROFA) – Both Runway Ends			
Length beyond departure end	300’	300’	Yes
Length prior to threshold	300’	300’	Yes
Width	500’	500’	Yes
Runway Obstacle Free Zone (ROFZ) – Both Runway Ends			
Length	200’	200’	Yes
Width	250’	250’	Yes
Precision Obstacle Free Zone (POFZ)			
Length	N/A	N/A	N/A
Width	N/A	N/A	N/A
Runway Separation			
Runway centerline to:			
Parallel runway centerline	700’	700’[1]	Yes
Holding position	125’	125’	Yes
Parallel taxiway/taxilane centerline (Taxiway C)	300’	240’	Yes
Parallel taxiway/taxilane centerline (Taxiway E)	240’	240’	Yes
Aircraft parking area (east)	>357’[2]	357'[2]	Yes
Aircraft parking area (west)	N/A	N/A	N/A

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Sources: *Mead & Hunt, 2023; FAA Advisory Circular 150/5300-13B.*

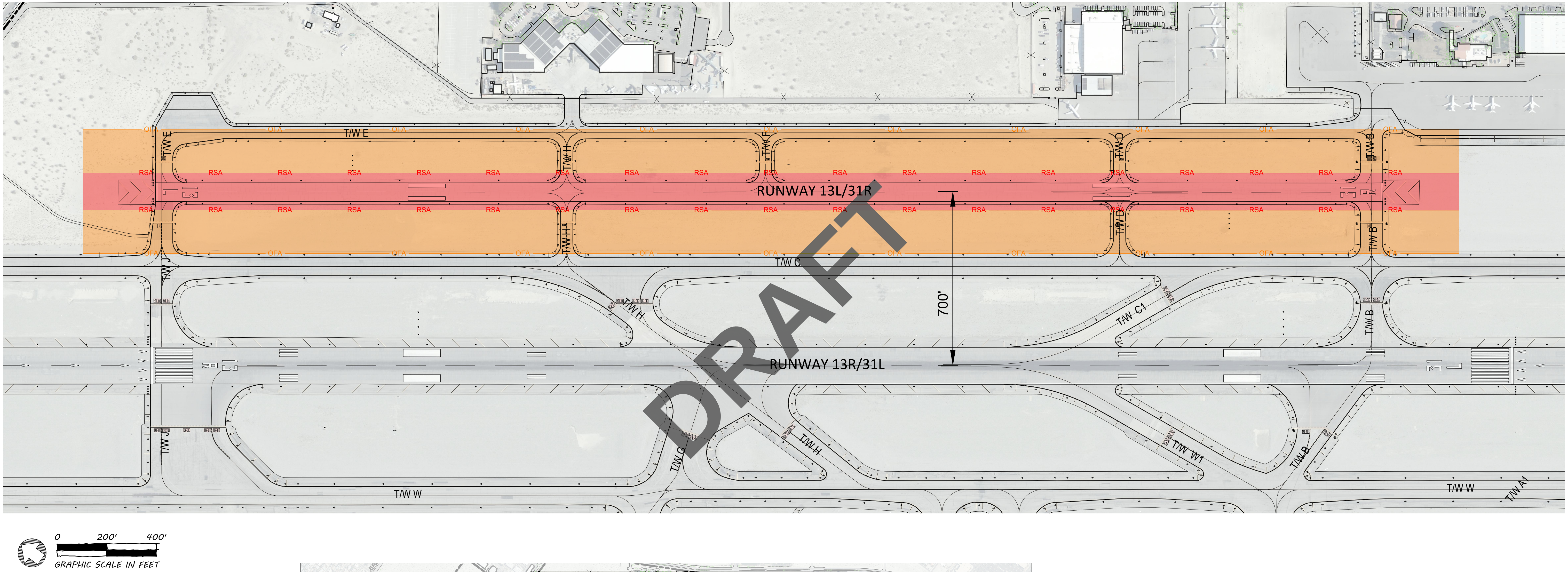
Notes: [1] *Specified separation requirements for simultaneous takeoff and landings under VFR conditions.*

[2] *Aircraft parking east = runway/taxiway separation + TOFA/2 + TLOFA/2 = 240 + (124/2) + (110/2) = 357.*

Runway 13L/31R Design Standards Conclusion

Runway 13L/31R meets the current FAA design standards for RDC B-II (Small)-VIS.

Figure 5-4: Runway 13L/31R Design Standards B-II (Small)-VIS - Detail


T/W E
OFA
RSA
T/W H
T/W F
T/W D
T/W B
RUNWAY 13L/31R
T/W C
T/W J
T/W H
T/W C1
700'
T/W B
RUNWAY 13R/31L
T/W J
T/W G
T/W H
T/W W1
T/W B
T/W W
T/W W
T/W A1
0 200' 400'
GRAPHIC SCALE IN FEET

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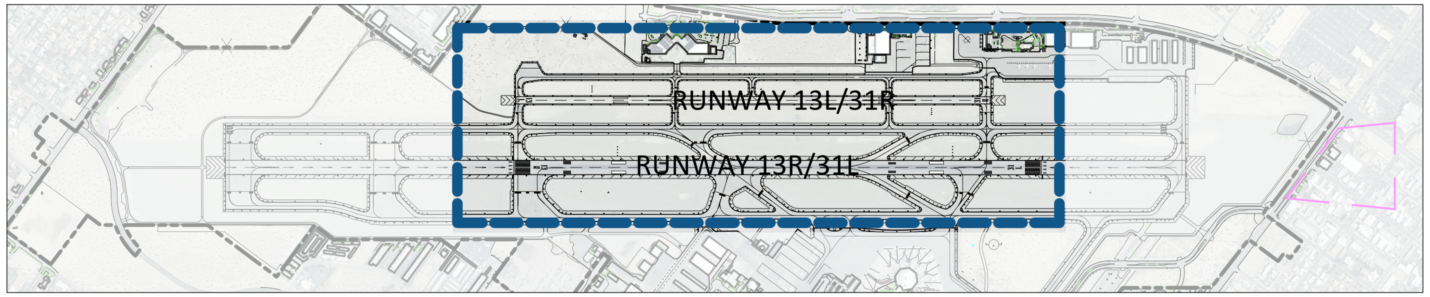
Legend

🟥 Runway Safety Area

🟧 Runway Object Free Area

---- Airport Property Line


RUNWAY 13L/31R
RUNWAY 13R/31L
0 1000' 2000'
GRAPHIC SCALE IN FEET

Keymap

CRITERIA MET/NO NON-STANDARD CONDITIONS

Runway Length Analysis

Adequate runway length is essential for the safety of aircraft takeoffs and landings. Following guidance provided in AC 150/5325-4B, *Runway Length Requirements for Airport Design*, individual Airport Planning Manuals (APMs) produced and published by aircraft manufacturers should be used to evaluate commercial service aircraft with Maximum Takeoff Weights (MTOWs) greater than 60,000 pounds. Therefore, the APMs for the most demanding commercial service passenger aircraft serving PSP will be used to identify a recommended length for Runway 13R/31L. In comparison, the evaluation of the recommended length for Runway 13L/31R will focus on the family grouping of smaller general aviation aircraft with maximum certificated takeoff weight of 12,500 pounds or less, and a percentage of the larger general aviation aircraft fleet with maximum certificated takeoff weights ranging from 12,500 pounds to 60,000 lbs.

The performance requirements of the identified critical aircraft for the runway length analysis determine the recommended runway length. Factors that affect aircraft performance capabilities include the airport elevation, air temperature, aircraft payload and fuel requirements, effective runway gradient, and weather conditions (e.g., wet pavement). The application of these factors for PSP are presented below.

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Elevation

Aircraft performance declines at higher altitudes because the air is less dense. Higher elevations negatively impact thrust produced by the aircraft on takeoff and the aerodynamic performance of the aircraft. An elevation of 476 feet above mean sea level (AMSL) will be used for this analysis at PSP. In addition, for runways having non-zero effective runway gradients the recommended runway lengths from the APMs and/or tables from AC 150/5325-4B must be adjusted (i.e., increased by a length of 10 feet per foot of difference in runway centerline elevations between the high and low points of the runway centerline). This required adjusted increase in length for the two runways at PSP is presented as follows:

- Runway 13R/31L @ 782'
- Runway 13L/31R @ 422'

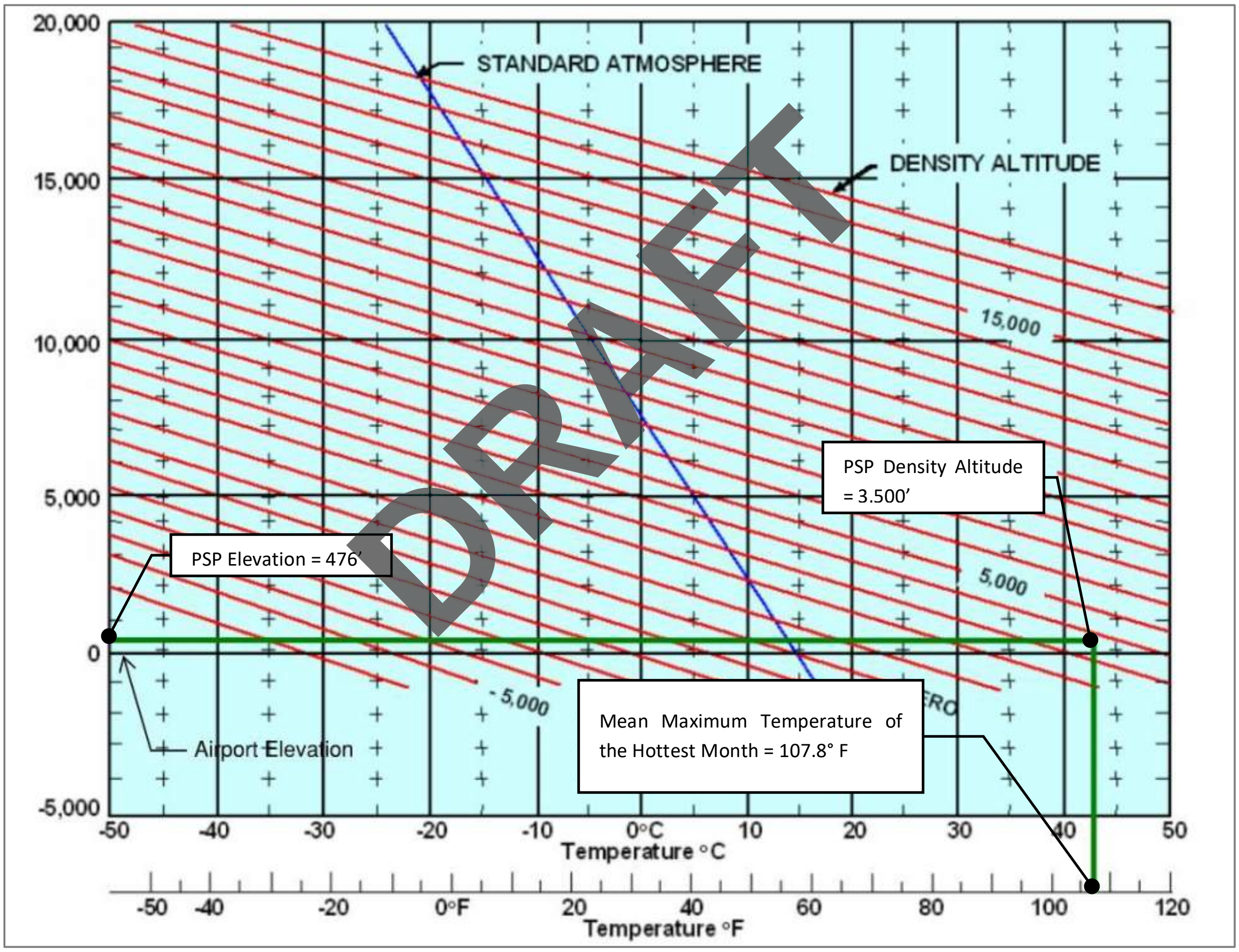
International Standard Atmosphere

International Standard Atmosphere (ISA) is a mathematical model that describes how the earth's atmosphere, or air pressure and density, changes relative to altitude. The atmosphere is less dense at higher elevations. ISA is frequently used in aircraft performance calculations because conditions that deviate from ISA will affect aircraft performance. ISA at sea level occurs when the temperature is 59 degrees Fahrenheit. According to the 1976 Standard Atmosphere Calculator, the ISA at PSP's 476 feet AMSL occurs when the temperature is 55 degrees Fahrenheit.

Density Altitude

Density Altitude (DA) compares air density to ISA at a point in time and specific location and is also a critical component of aircraft performance calculations. DA is used to describe how aircraft performance differs from the performance that would be expected under ISA. DA is primarily influenced by elevation and air temperature. **Figure 5-5** illustrates how DA is impacted when factoring in the average maximum temperature of the hottest month. The PSP DA during the hottest month, when the ambient air temperature is 107.8 degrees Fahrenheit, is 3,500 feet AMSL. As a measure of high temperature impacts on aircraft performance, this DA will be applied in the aircraft performance assessment and the resulting runway length recommendation.

Figure 5-5: Density Altitude Adjustment



PSP Density Altitude = 3.500’

PSP Elevation = 476’

Mean Maximum Temperature of the Hottest Month = 107.8° F

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Sources: *Mead & Hunt, 2023; FAA Aircraft Performance.*

Required Takeoff Weight and Flight Distance

Aircraft takeoff weight is directly related to the distance of the flight flown (i.e., the stage length) and the required payload (e.g., passengers, cargo, and fuel) that the aircraft is carrying. For shorter flights, aircraft may depart with a full passenger load and less than full fuel tanks. In those instances, the operational weight of the aircraft will be below the MTOW, and thus the required runway takeoff length can be reduced. Aircraft require more fuel for longer stage length flights, which increases the required takeoff weight of the aircraft. These longer stage length flights can at times require payload restrictions on the passengers, baggage, and cargo that can be carried. An aircraft with full passenger and fuel loads will require operational weights near its MTOW.

Given the seasonal variability of the commercial passenger service schedule at PSP (i.e., the year-round flights provided by the carriers vs. the additional cities served in the winter season), the runway length requirements will vary throughout the year based upon the stage length distances flown and the temperatures at the time of the flight. For example, the majority of the year-round flights that operate during the hot summer months generally benefit from the shorter stage lengths (e.g., less than 1,000 nautical miles [nms]) being flown to U.S. cities along the West Coast and the Mountain West, which reduces the required takeoff weights and associated runway length requirements. However, given the extreme high temperatures that occur at PSP during the summer months (e.g., averaging well above 100 degrees Fahrenheit during the months of June – September), it is expected that some passenger payload penalties could be required. These conditions are contrasted by the additional winter seasonal passenger flights that require longer stage lengths to central and east coast U.S. cities, ranging between 1,000 and 2,000 nms. For these flights, heavier aircraft takeoff weights are required, but the impact of this weight on the runway length requirement is often offset by the cooler operating temperatures resulting from the improved engine performance of the aircraft.

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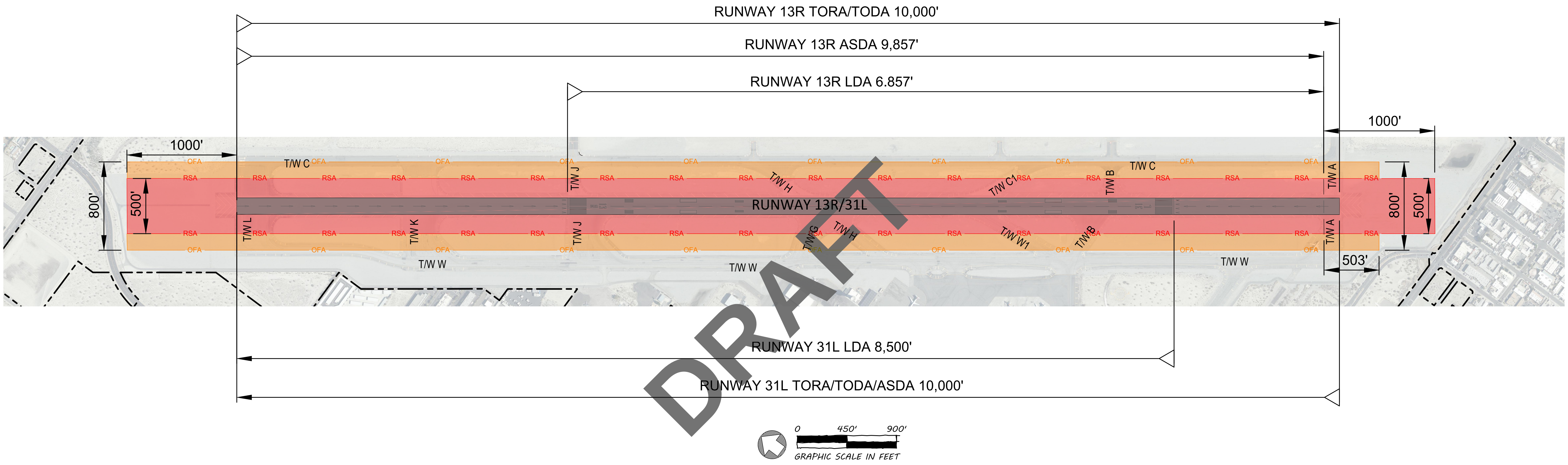
Weather Conditions

From a runway length evaluation standpoint, weather conditions at the airport typically impact the landing length requirements of the aircraft due to the presence of moisture on the runway pavement in the form of rain, snow, or combinations thereof. The majority of the APMs include separate landing length requirements for both dry and wet pavement landings that are to be used for general planning assessments. In most cases, an aircraft's runway takeoff length requirements will be greater than the length required for landings. However, due to the length of the existing displaced thresholds at each end of Runway 13R/31L and the resulting published declared distances for the runway, the specified Landing Distance Available (LDA) is reduced for each runway end (particularly for landings to Runway 13R). Therefore, a detailed landing length evaluation will be conducted for this runway. **Figure 5-6** and **Figure 5-7** present the existing published declared distances for each runway at PSP.

Figure 5-6: Runway 13R/31L Declared Distances

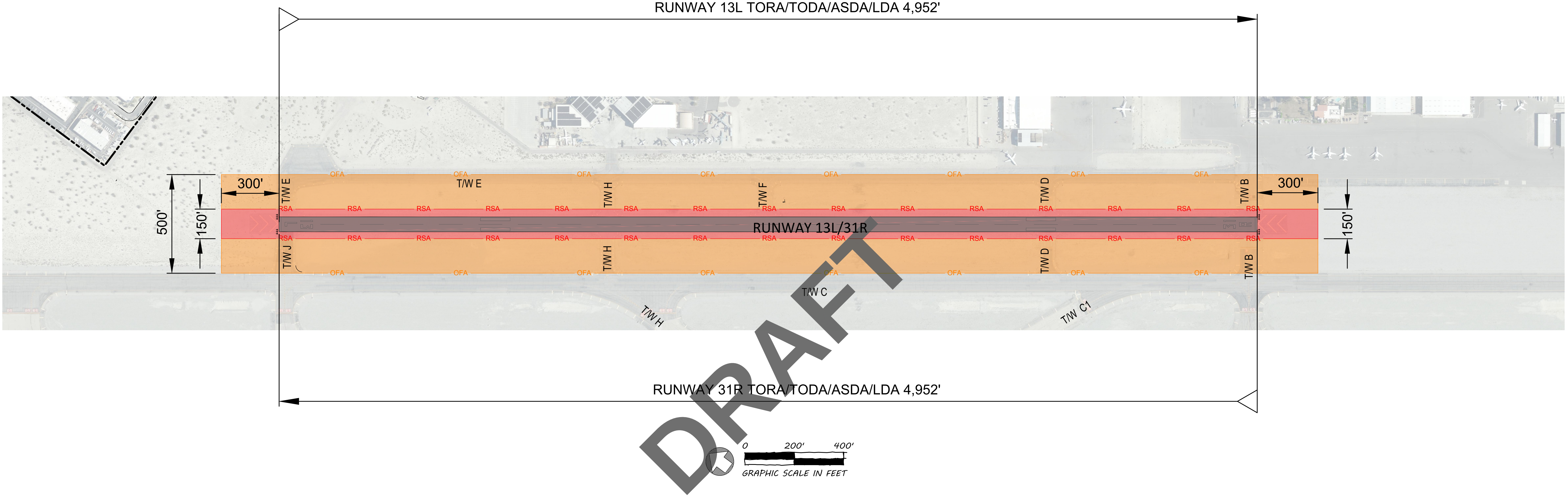

RUNWAY 13R TORA/TODA 10,000'
RUNWAY 13R ASDA 9,857'
RUNWAY 13R LDA 6.857'
1000'
1000'
800'
500'
800'
500'
503'
RUNWAY 13R/31L
T/W C
T/W C
T/W L
T/W K
T/W J
T/W J
T/W H
T/W H
T/W G
T/W C1
T/W W1
T/W B
T/W B
T/W A
T/W A
T/W W
T/W W
T/W W
RSA
OFA
RUNWAY 31L LDA 8,500'
RUNWAY 31L TORA/TODA/ASDA 10,000'
0
450'
900'
GRAPHIC SCALE IN FEET

DRAFT

Legend

🟥 Runway Safety Area	ASDA - Accelerate Stop Distance Available
🟧 Runway Object Free Area	LDA - Landing Distance Available
⬜ Runway	TODA - Takeoff Distance Available
---- Airport Property Line	TORA - Takeoff Run Available

Figure 5-7: Runway 13L/31R Declared Distances


RUNWAY 13L TORA/TODA/ASDA/LDA 4,952'
300'
500'
150'
T/W E
T/W H
T/W F
T/W D
T/W B
T/W J
OFA
RSA
RUNWAY 13L/31R
T/W C
T/W H
T/W C1
300'
150'
RUNWAY 31R TORA/TODA/ASDA/LDA 4,952'
0
200'
400'
GRAPHIC SCALE IN FEET

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Legend

- 🟥 Runway Safety Area
- 🟧 Runway Object Free Area
- ▨ Runway
- ---- Airport Property Line

ASDA - Accelerate Stop Distance Available
LDA - Landing Distance Available
TODA - Takeoff Distance Available
TORA - Takeoff Run Available

As shown in **Figure 5-6**, landings to the south (to Runway 13R) provide an LDA of 6,857 feet, while landings to the north (to Runway 31L) have a published LDA of 8,500 feet. In addition, the Accelerate Stop Distance Available (ASDA) for Runway 13R takeoffs to the south is published at 9,857 feet, which is less than the 10,000 feet of physical runway length. This existing reduction in runway length available for takeoffs is due to the specified ROFA at the south end of the runway, which will also be evaluated in the required runway takeoff length analysis.

As shown in **Figure 5-7**, the published declared distances for Runway 13L/31R are equal to its physical runway length of 4,952 feet. This means the pavement length available for both takeoffs and landings in both directions is the same.

Selected Critical Aircraft for Runway Length Analysis

Runway 13R/31L (Primary Runway)

Based upon the existing and forecast operational counts of the commercial passenger aircraft fleet at PSP, presented in the **Aviation Activity Forecast** chapter, a total of five (5) air carrier passenger aircraft have been identified for this runway length analysis:

- Boeing 737-900 (185 Passengers)
- Boeing 737 MAX 9 (204 Passengers)
- Airbus 321neo (185 Passengers)
- Embraer 175 (76 Passengers)
- Boeing 787-8 (248 Passengers)

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As noted in **Table 5-4** below, three of these aircraft (i.e., the Airbus 321neo, Boeing 737-900, and Embraer 175) satisfy the current "substantial use" operations threshold (i.e., >500 annual operations) for this analysis, while the Boeing 737 MAX 9 is forecast to replace the Boeing 737-900 within the 20-year (2042) planning period. In addition, the Airport Sponsor has requested the Boeing 787-8 aircraft be included in this analysis to document the operational performance characteristics of this aircraft and associated runway length requirements in consideration of the addition of potential future international passenger service to Ireland and/or England from PSP.

Table 5-4: Critical Aircraft Operations

Aircraft	2022	2027	2032	2037	2042
Boeing 737-900	2,962	1,736	1,277	650	0
Boeing 737 MAX 9	174	1,517	2,343	3,329	4,355
Airbus A312neo	1,602	1,543	2,159	2,941	3,343
Embraer 175	8,810	12,335	15,821	18,317	20,806
Boeing 787-8	0	0	0	0	0

Source: *Unison Consulting, Inc.*

Runway 13L/31R (GA Additional Runway)

As previously noted, the recommended runway lengths for the smaller general aviation fleet are generated from specified tables provided in AC 150/5325-4B that are based upon a family grouping of aircraft, which are characterized by various weight categories. Due to the existing length of 4,952 feet, Runway 13L/31R predominantly serves smaller general aviation aircraft with maximum certificated takeoff weight of 12,500 pounds or less. However, in consideration of current planning objectives initiated by the future expansion of the passenger terminal facility, there are potential long-term planning opportunities to improve the separation of commercial service and small general aviation aircraft operations at PSP with the extension of this runway to serve a percentage of the larger general aviation aircraft fleet with maximum certificated takeoff weights ranging from 12,500 pounds to 60,000 pounds (e.g., 75 percent of the fleet at 90 percent useful load).

Recommended Runway Length Determination

Runway 13R/31L (Primary Runway) – Takeoffs

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Table 5-5 below presents each of the aircraft takeoff length requirements that were evaluated based upon their certified MTOWs and an estimated aircraft operational weight that can be accommodated by the existing 10,000-foot runway length. **Figure 5-8** graphically depicts Runway 13R/31L's MTOW length requirements. As can be noted, the runway length requirements at MTOW, prior to required adjustments for the effective runway gradient, exceed the existing 10,000-foot runway for four of the aircraft (i.e., the Boeing 737-900, Boeing 737 MAX 9, Airbus A312neo and Boeing 787-8). However, based upon the payload/range analysis at the specified 107.8 degrees Fahrenheit mean max temperature for PSP (in accordance with the planning guidelines in AC 150/5325-4B), each of the aircraft can operate without passenger payload penalties at the existing 10,000-foot runway length. This does not mean that some passenger payload penalties can be required for some of the passenger aircraft during the extreme summertime afternoon temperatures that can occur at PSP, but no additional runway length for takeoff is recommended at this time. In addition, the required adjustments for the effective runway gradient for this runway are accounted for by the pilot prior to takeoff, in consideration of the existing 10,000-foot runway length.

Table 5-5: Runway 13R/31L Takeoff Length Analysis

Aircraft/Engine	Maximum Takeoff Weight (MTOW)	Required RWY Length @ MTOW[1]/Adjusted RWY Length for Effective RWY Gradient[2]	Estimated Aircraft Operational Weight[3] @ 10,000' Runway Length[4]	Percent of MTOW @ 10,000' Runway Length	Estimated Stage Length at Existing 10,000'
Boeing 737-900/CFM56-7B24	174,200 lbs.	13,500'/14,290'	164,000 lbs.	94.1%	1,300 nms.
Boeing 737 MAX 9/LEAP-1B27	183,000 lbs.[5]	11,200'/11,990'	176,000 lbs.	96.2%	1,100 nms.
Airbus A321neo/PW Engines	213,848 lbs.	12,500'/13,290'	203,000 lbs.	94.9%	3,000 nms.
Embraer 175/CF34-8E5	85,517 lbs.	9,850'/10,640'	85,517 lbs.	100%	1,600 nms.
Boeing 787-8/Typical Engine	502,500 lbs.	15,200'/15,990'	455,000 lbs.	90.5%	5,000 nms.

Sources: *Mead & Hunt, 2023; Manufacturer Aircraft Planning Manuals (APMs).*

Notes:

[1] *Runway lengths required at the specified 107.8°F mean max temperature for PSP.*

[2] *Effective runway gradient length adjustment = 790'*

[3] *Weight includes 100% Passenger Payload plus aircraft Operational Empty Weight (OEW)*

[4] *Estimated aircraft operational weight is slightly reduced for Runway 13R takeoffs due to published 9,857' ASDA length.*

[5] *Estimated brake Energy Limit Weight is less than 194,700 lbs. MTOW.*

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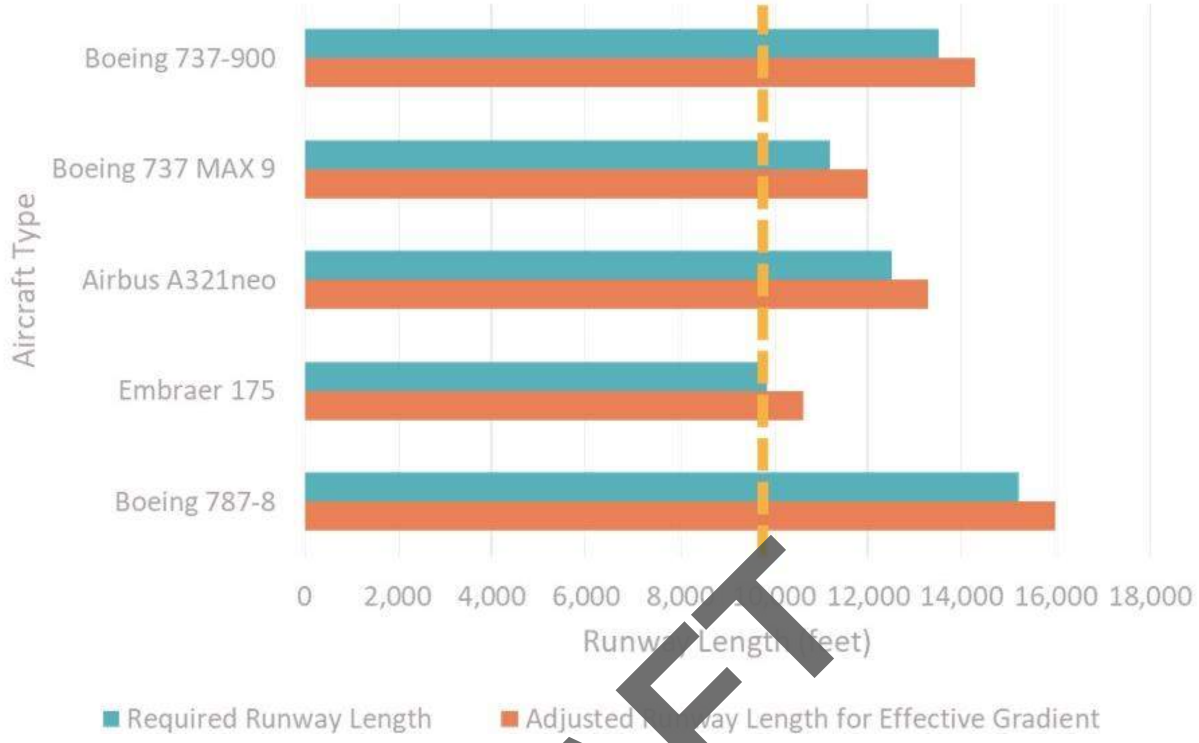
Figure 5-8: Runway 13R/31L MTOW Length Requirements



Sources: *Mead & Hunt 2023; Various Aircraft Characteristic Manuals.*

Note: *Runway length analysis is based on the worst-case scenario at an airport. At PSP, the worst-case scenario is taking off to the north because the aircraft is taking off in the direction of the uphill gradient.*

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Runway 13R/31L (Primary Runway) – Landings

As with takeoff operations, the runway landing length requirements of aircraft are dictated by the aircraft operational weight at the time of the landing. As noted in AC 150/5325-4B, this specified landing weight for planning purposes is based on the certified maximum landing weight for the aircraft. In addition, most landing length tables in the APMs provide the minimum required landing lengths for both dry and wet pavement conditions for various flap settings. **Table 5-6** below presents the recommended landing length data for each of the five (5) aircraft identified for analysis at PSP. **Figure 5-9** graphically depicts Runway 13R/31L's landing length requirements.

As can be noted, the required landing lengths for each aircraft (i.e., for both dry and wet pavements) must be compared to the existing published LDA for each runway end. Due the runway's existing displaced thresholds at each end, the specified LDAs are less than the physical length of the runway that is available for takeoffs. The existing Runway 13R LDA, measuring 6,857 feet, is the most restrictive, but slightly exceeds the recommended minimum runway landing length for the Boeing 737-900, which is identified as the most demanding aircraft for landings at PSP. In addition, the 2015 Master Plan for PSP identified previous land use compatibility/noise migration efforts (i.e., increasing the altitude of aircraft overflying adjacent residential land uses during landings) as the reason for establishing the existing Runway 13R/31L threshold displacements. Landing lengths are met for each of the aircraft; therefore, the existing threshold displacements in their existing conditions is adequate.

Table 5-6: Runway 13R/31L Takeoff Length Analysis

Aircraft/Flap Setting	Maximum Landing Weight (MLW)	Estimated Runway Length @ MLW (Dry/Wet)	Existing Runway 13R LDA	Existing Runway 31L LDA	Existing LDA for each Runway end meets minimum recommended length
Boeing 737-900/Flaps 30	146,300 lbs.	6,000'/6,800'	6,857'	8,500'	Yes
Boeing 737 MAX 9/Flaps 40	163,900 lbs.	5,200'/6,000'	6,857'	8,500'	Yes
Airbus A312neo/Flaps 40	175,000 lbs.	5,300'/6,100'[1]	6,857'	8,500'	Yes
Embraer 175/Flaps 5 & Full	74,957 lbs.	4,600'/5,300'[1]	6,857'	8,500'	Yes
Boeing 787-8/Flaps 30	380,000 lbs.	5,400'/6,100'	6,857'	8,500'	Yes

Sources: *Mead & Hunt, 2023; Manufacturer Aircraft Planning Manuals (APMs).*

Note: [1] *Dry pavement landing length data from APM was increased by 15% to estimate wet pavement length requirements.*

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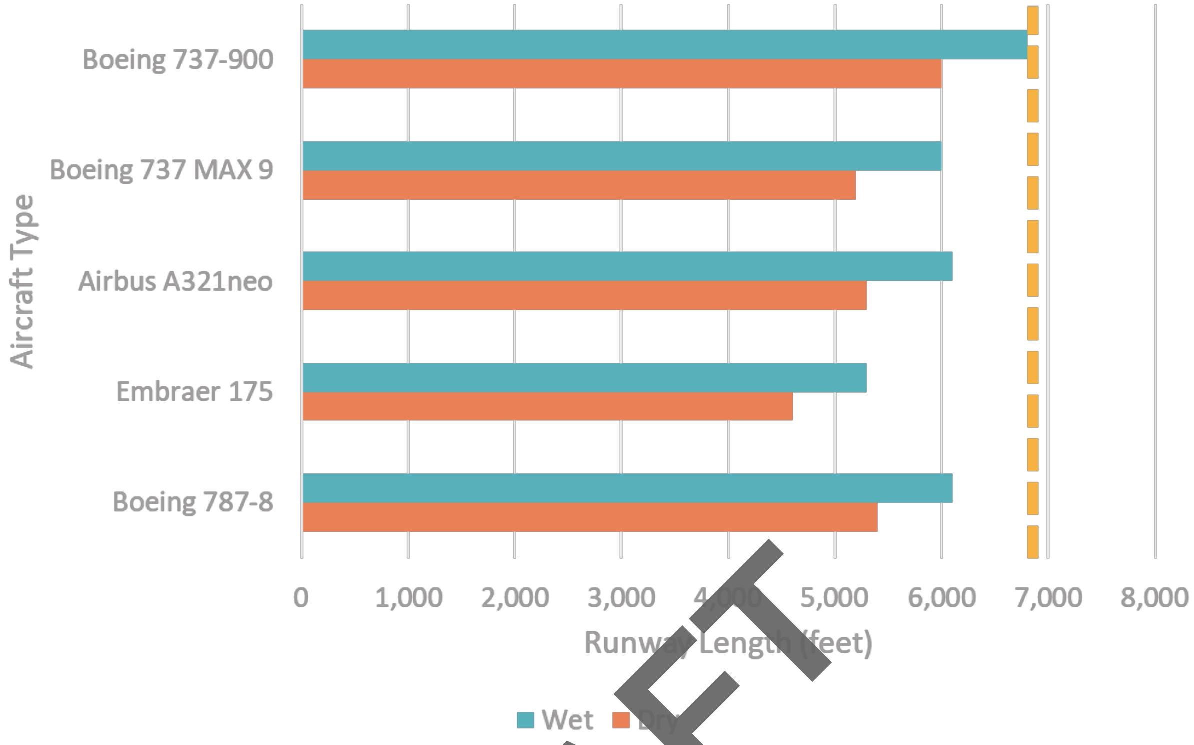
Figure 5-9: Runway 13R/31L Landing Length Analysis



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Sources: *Mead & Hunt 2023; Various Aircraft Characteristic Manuals.*

Note: *Runway length analysis is based on the worst-case scenario at an airport. At PSP, the worst-case scenario is landing to the south because the aircraft is landing in the direction of the downhill gradient.*

Runway 13L/31R (Additional Runway) Length Analysis

Serving as the Airport's additional parallel runway, Runway 13L/31R primarily accommodates small general aviation users at PSP, with aircraft having a MTOW of less than 12,500 pounds. However, it is understood that Airport Traffic Control Tower (ATCT) personnel along with jet users themselves would like to operate on this runway separate from the air carrier traffic operating on Runway 13R/31L. Therefore, the runway length analysis for Runway 13L/31R included business and midsize jets in addition to small aircraft. The recommended runway lengths for these weight categories of airplanes are derived from AC 150/5325-4B. The runway length recommendations are dependent on meeting the operational requirements of a certain percentage of the fleet (i.e., 100 percent of the fleet at 60 and 90 percent useful load). **Table 5-7** presents takeoff distance required, and **Figure 5-10** graphically depicts the runway length requirements for Runway 13L/31R.

Table 5-7: Runway 13L/31R Runway Length Requirements

Aircraft Type	Takeoff Distance Required			
	60% of Useful Load Factor[1]		90% of Useful Load Factor	
	Takeoff	Landing[2]	Takeoff	Landing[2]
Business Jet[3]	6,120’	7,038’	9,320’	10,718’
Mid-size Jet[4]	5,220’	6,003’	7,420’	8,533’
Small Aircraft[5]	4,300’			

Sources: *Mead & Hunt 2023; AC 150/5323-4B.*

Notes: [1] *Useful load factor – the difference between the maximum allowable structural gross weight and the operating empty weight.*

[2] *Dry pavement landing length data from AC 150/5325-4B was increased by 15% to estimate wet pavement length requirements. However, PSP experiences mostly dry conditions; therefore, the takeoff length will be used for the runway length analysis.*

[3] *Business Jet – Airplanes that make up 25% of “greater than 12,500 pounds but less than 60,000 pounds” fleet.*

[4] *Mid-Size Jet – Airplanes that make up 75% of “greater than 12,500 pounds but less than 60,000 pounds” fleet.*

[5] *Small Aircraft – Airplanes that are less than 12,500 pounds and have more than 10 seats.*

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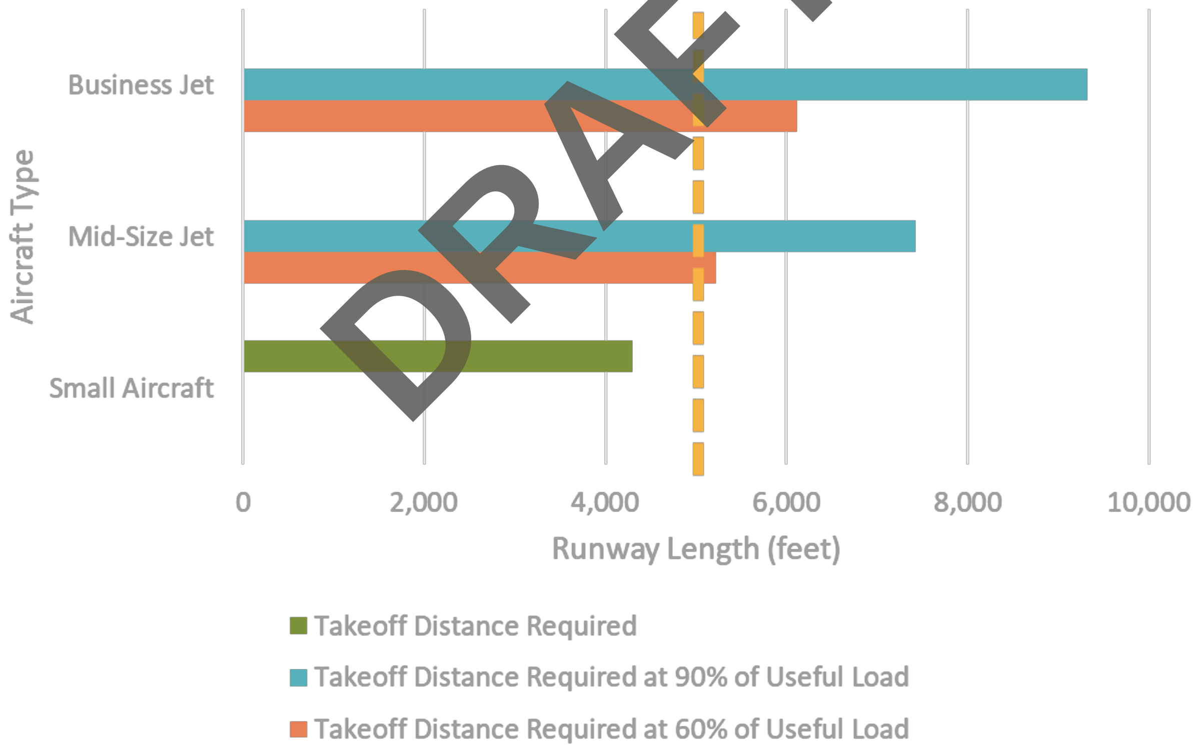
Figure 5-10: Runway 13L/31R Runway Takeoff Length Requirements



Sources: *Mead & Hunt 2023; AC 150/5323-4B.*

Notes: *For the purposes of this aircraft definitions of Business Jet, Mid-Size Jet, Small Aircraft are as follows.*

Business Jet – Airplanes that make up 25% of “greater than 12,500 pounds but less than 60,000 pounds” fleet.

Mid-Size Jet – Airplanes that make up 75% of “greater than 12,500 pounds but less than 60,000 pounds” fleet.

Small Aircraft – Airplanes that are less than 12,500 pounds and have more than 10 seats.

Runway 13L/31R Analysis Conclusion

Figure 5-10 shows that the existing runway length for Runway 13L/31R is adequate for small aircraft. However, the runway cannot accommodate any jets with the existing length. Extending the runway to meet the requirements of business jets is likely unfeasible given how much length they require, but it is possible to extend the runway by approximately 1,000 to 2,000 feet to meet the needs of small to mid-size jets.

Due to discussions with ATCT personnel and Airport staff, the **Alternatives Analysis** chapter will consider extending the runway to allow some small to midsize jets to operate on it. It is important to note that this runway extension would not be eligible for FAA funding. However, this extension could potentially provide the following benefits:

- The extension may reduce runway crossings.
- The extension may create a more efficient airfield by separating some of the general aviation traffic from the air carrier traffic.

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Runway Pavement Strength

According to AC 150/5320-6G, *Airport Pavement and Evaluation*, airport pavements should be able to support loads of the aircraft that operate at the Airport. The pavement must be free of foreign object debris, be able to accommodate aircraft loads year-round, and be skid resistant.

Airport pavements are either rigid (concrete) or flexible (asphalt). Both runways are currently paved with asphalt. The types of aircraft landing on runways will determine the type and strength of the pavement. PSP runway pavement strengths are summarized below.

- **Runway 13R/31L** @ 105,000 pounds single wheel, 200,000 pounds dual wheel, 330,000 pounds dual tandem wheel, and 800,000 pounds dual double tandem wheel main landing gear configuration.
- **Runway 13L/31R** @ 12,500 pounds single wheel and 60,000 pounds dual wheel main landing gear configuration.

Runway Pavement Strength Conclusion

Both runways' pavement strength at PSP are considered adequate. It is recommended that the Airport continue to maintain both runways at their current published runway pavement strength.

Runway Protection Zones

The function of a runway protection zone (RPZ) is to enhance the protection of people and property on the ground beyond the runway ends. This is achieved through airport control of the RPZ areas, and control is preferably exercised through the acquisition of sufficient property interest within the RPZ. It is desirable to clear all above ground objects from within RPZs; where this is impractical, airport owners, at minimum, should maintain the RPZ clear of all facilities supporting incompatible activities.

As defined in AC 150/5300-13B, RPZs are trapezoidal in shape, are centered about the runway centerline, and are specified as either Approach or Departure RPZs. The RPZs extend from a point 200 feet beyond the end of the area usable for takeoff or landing. The RPZ dimensions are functions of the type of aircraft using the runway and the approach visibility minimums associated with each runway end. Existing RPZ dimensions are summarized in **Table 5-8**.

Table 5-8: Runway Protection Zone (RPZ) Dimensions

Item	Width at Inner End	Length	Width at Outer End	Meets Dimensional Standards	Airport Controls Entire RPZ	RPZ Clear of all Objects on Ground
Runway 13R/31L						
Runway 13R (Departure)	500’	1,700’	1,010’	Yes	**No**	**No**[1]
Runway 13R (Approach)	500’	1,700’	1,010’	Yes	Yes	Yes
Runway 31L (Departure)	500’	1,700’	1,010’	Yes	**No**	**No**[2]
Runway 31L (Approach)	500’	1,700’	1,010’	Yes	Yes	**No**[1]
Runway 13L/31R						
Runway 13L (Approach & Departure)	250’	1,000’	450’	Yes	Yes	Yes
Runway 31R (Approach & Departure)	250’	1,000’	450’	Yes	Yes	Yes

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Source: *Mead & Hunt, 2023.*

Notes: *[1] Existing roadway is classified as an incompatible land use within the boundary of the RPZ.*

[2] Existing objects (i.e., roadways, perimeter roads, fence, and off-airport structures) within the boundary of the RPZ are classified as incompatible land uses).

Incompatible activities are evaluated in **Table 5-9** according to AC 150/5190-4B, *Airport Land Use Compatibility Planning*.

Table 5-9: Runway Protection Zone Land Use Compatibility

Land Uses	Noise Sensitivity	Concentration of People	Tall Structures	Visual Obstructions	Wildlife & Bird Attractants
Residential Uses	I	I	P	P	P
Commercial Activities	I	I	P	P	P
Industrial and Mining Activities	N	P	P	P	P
Institutional Activities	I	I	I	I	I
Infrastructure/Utilities/Energy Production Activities	N	N	I	I	P
Agriculture and Open Space Activities	N	N	N	I	I
Parks and Recreation Activities	I	P	P	P	P

Sources: *Mead & Hunt, 2023; AC 150/5190-4B.*

Notes: *I – Impact*
P – Potential Impact
N – No Impact

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Using **Table 5-9**, the four runway ends' RPZs were evaluated in the following sections.

Runway 13R RPZ

The land use underneath the departure RPZ is mostly on airport property. As shown in **Figure 5-11**, the existing development underneath the departure RPZ includes portions of two roadways: N Farrell Drive and E Vista Chino. The portion of N Farrell Drive underneath the departure RPZ is on airport property, while small portions of E Vista Chino underneath the departure RPZ are off-airport property. This means this portion of roadway is the only development inside the RPZ that is not under the control of the Airport. **Table 5-10** shows the analysis findings, which indicate potential impacts to Wildlife and Bird Attractants, that can be mitigated through the Airport's Wildlife Management Plan. Runway 13R's approach RPZ, depicted in **Figure 5-12**, is clear of development and is on airport property, meeting FAA standards.

Table 5-10: Runway 13R Departure RPZ Land Use Compatibility

Land Uses	Noise Sensitivity	Concentration of People	Tall Structures	Visual Obstructions	Wildlife & Bird Attractants
Commercial Activities	N	N	N	N	P

Source: *Mead & Hunt, 2023.*

Figure 5-11: Runway 13R Departure RPZ Design Standards D-III-5000

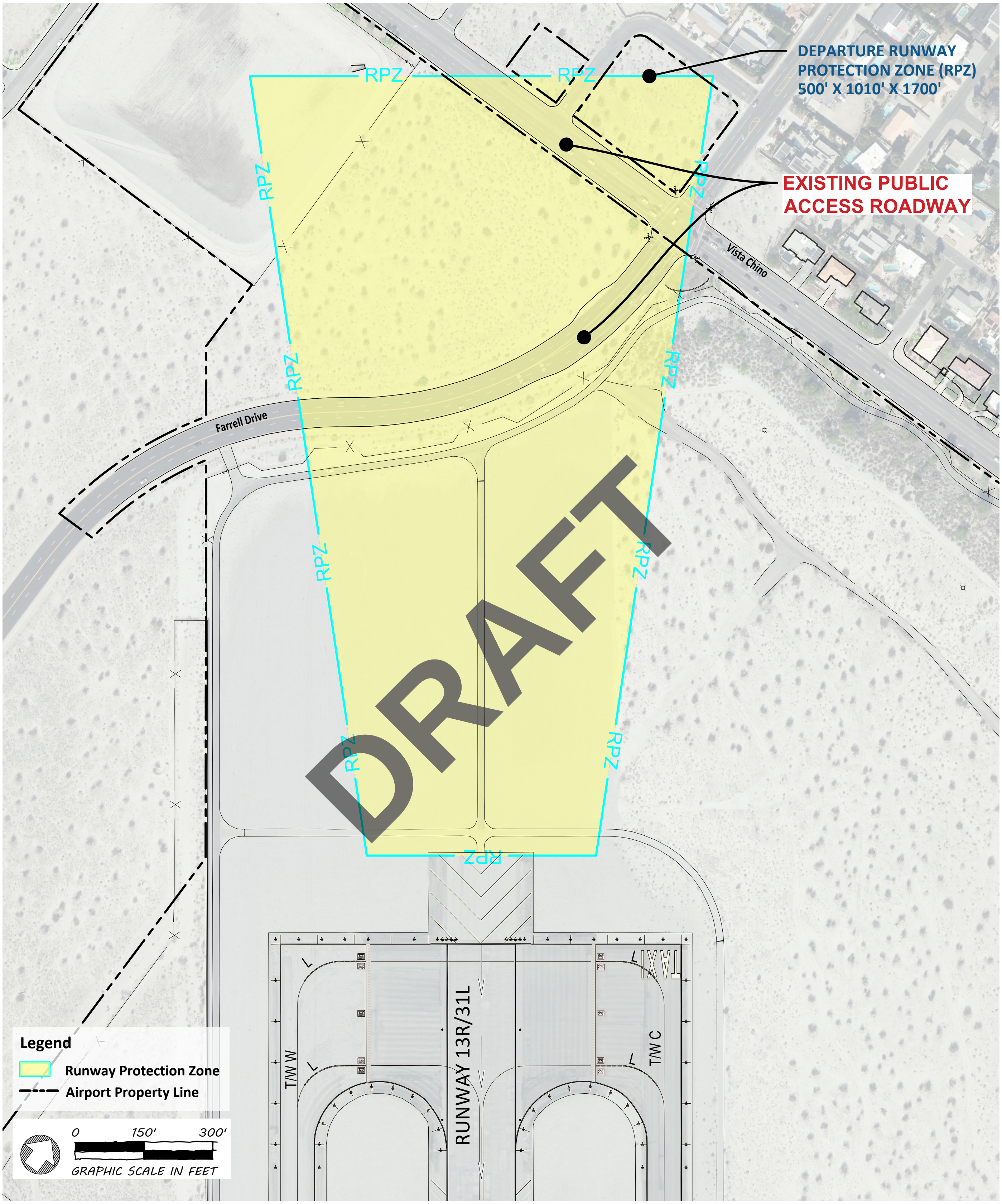
DEPARTURE RUNWAY PROTECTION ZONE (RPZ) 500' X 1010' X 1700'
EXISTING PUBLIC ACCESS ROADWAY
RPZ
Vista Chino
Farrell Drive
RUNWAY 13R/31L
T/W W
T/W C
TAXI
Legend
Runway Protection Zone
Airport Property Line
0
150'
300'
GRAPHIC SCALE IN FEET

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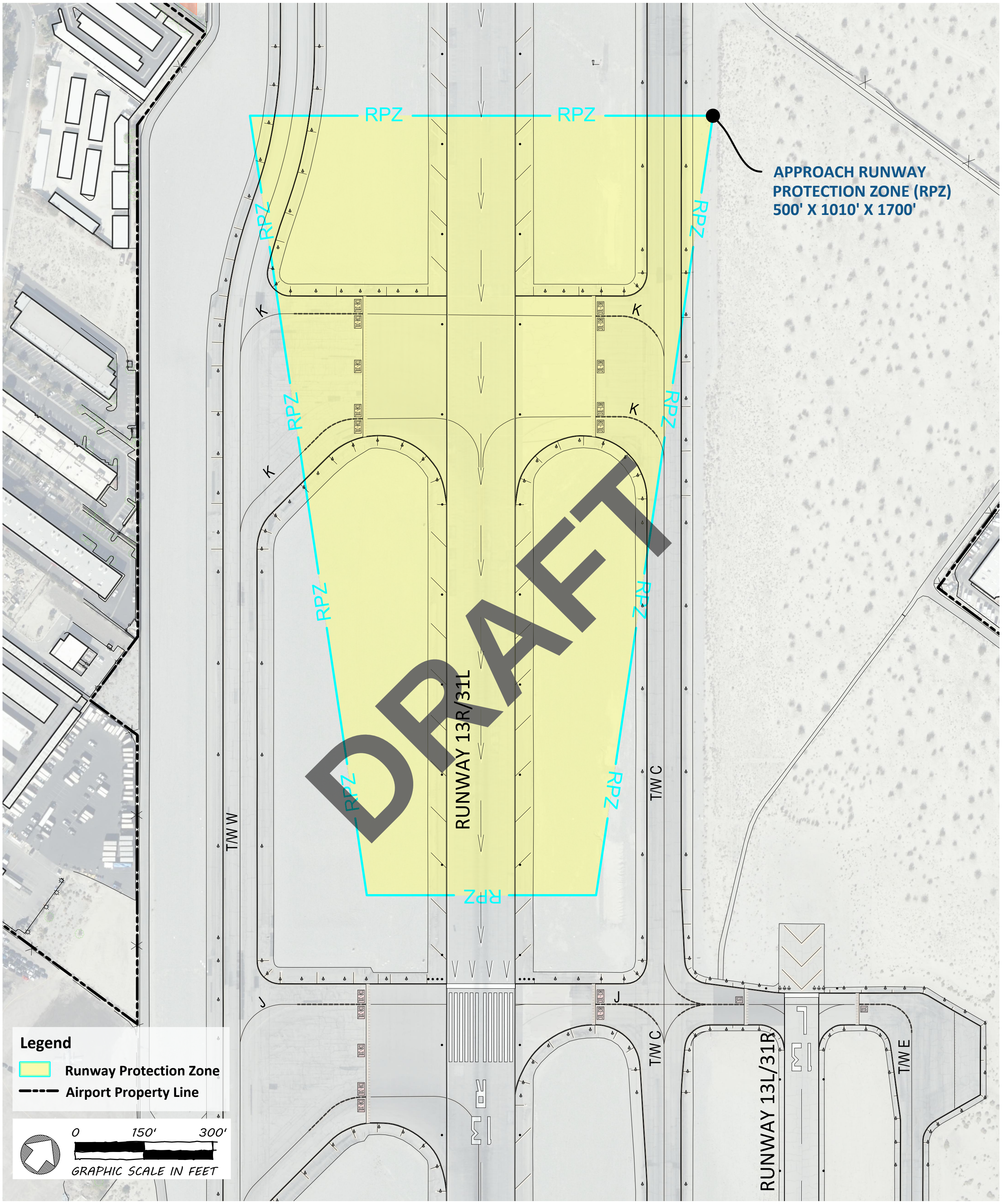
Figure 5-12: Runway 13R Approach RPZ Design Standards D-III-5000


RPZ
APPROACH RUNWAY PROTECTION ZONE (RPZ) 500' X 1010' X 1700'
K
J
T/W W
T/W C
T/W E
RUNWAY 13R/31L
RUNWAY 13L/31R
13R
13L
Legend
Runway Protection Zone
Airport Property Line
0
150'
300'
GRAPHIC SCALE IN FEET

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Runway 31L RPZ

The land use underneath the departure RPZ is designated as commercial and light industrial according to the City of Palm Springs current records. As shown in **Figure 5-13**, the variety of development underneath the departure RPZ includes a public roadway, airport service road, and several off-airport structures. The airport service road and the public roadway, E Ramon Road, are both on airport property. Although off airport property, the Airport has an existing avigation easement over the commercial and industrial development underneath the RPZ, which means the Airport does maintain control of the land underneath the RPZ.

Table 5-11 shows the existing land use compatibility for Runway 31L's departure RPZ. Although commercial development typically scores as impactful for both Noise Sensitivity and Concentration of People, in the case of the Runway 31L departure RPZ, this development is being considered as no impact and potential impact, respectively. The reason for this evaluation is that the type of commercial development is not the typical shopping centers, supermarket, hotels, or office buildings where people congregate in high numbers for long periods of the day. The type of commercial development underneath the Runway 31L RPZ includes a butcher shop, warehouses, and paint stores. Given the type of commercial development and the sizes of these existing structures, it is not anticipated that Noise Sensitivity and Concentration of People have a significant impact on the land use compatibility. Tall Structures and Visual Obstructions were determined to be of No Impact for two reasons: the existing structures all have relatively low roofs and are not current obstructions, and the Airport has an avigation easement over these structures and, therefore, control over the airspace above them. Similar to Runway 13R, Wildlife & Bird Attractants could be a potential impact that can be mitigated in the Airport's Wildlife Management Plan.

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Table 5-11: Runway 31L Departure RPZ Land Use Compatibility

Land Uses	Noise Sensitivity	Concentration of People	Tall Structures	Visual Obstructions	Wildlife & Bird Attractants
Commercial Activities	N	P	N	N	P
Industrial Activities	N	P	N	N	P

Source: *Mead & Hunt, 2023.*

Runway 31L's approach RPZ, shown in **Figure 5-14**, is on airport property and is mostly clear of development except that a corner of the RPZ covers a portion of a public roadway. Since the Airport controls this land, and only a small portion of the roadway is inside the RPZ, this was determined to be compatible land use.

Figure 5-13: Runway 31L Departure RPZ Design Standards D-III-5000

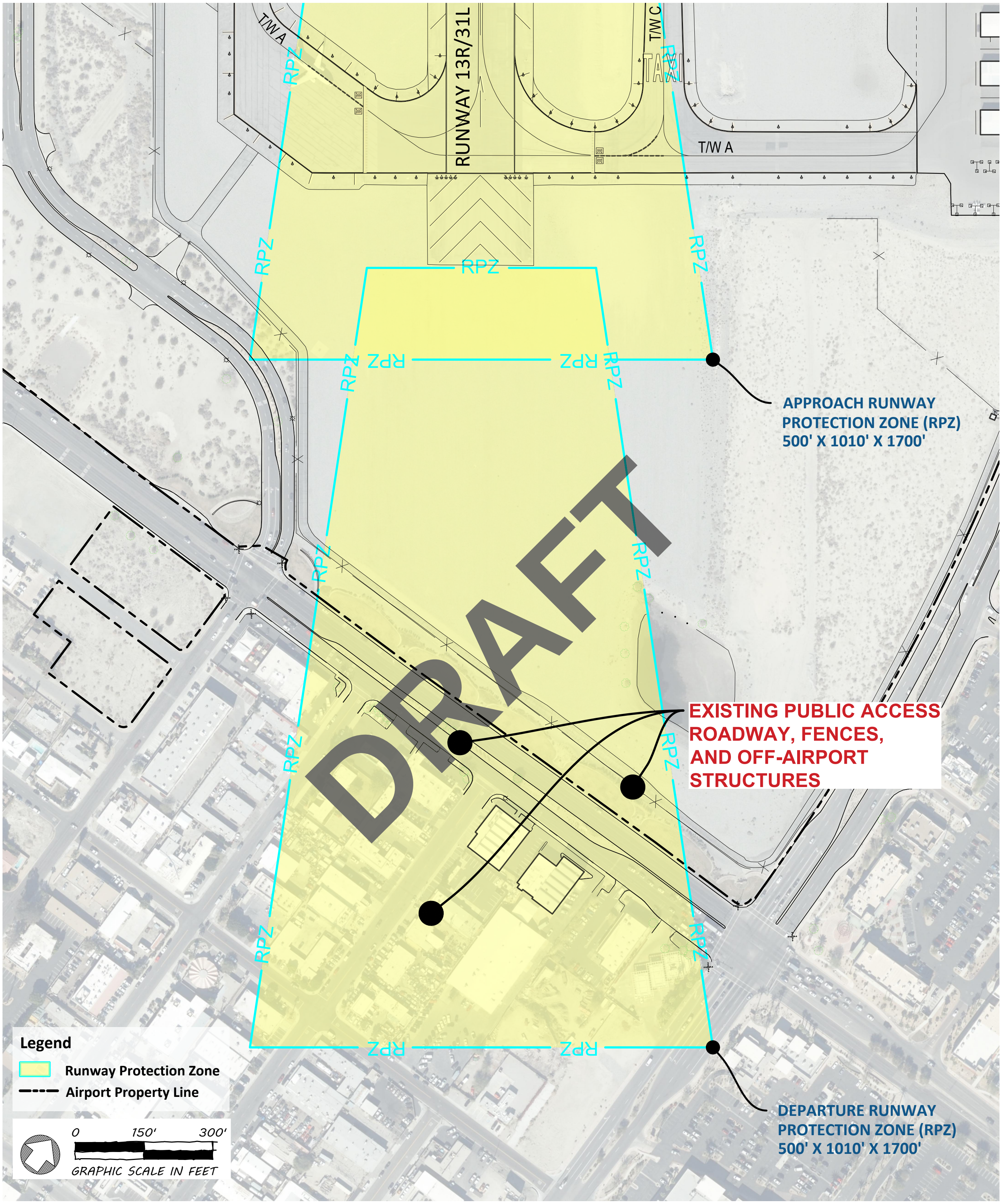
T/W A
RUNWAY 13R/31L
T/W C
TAXI
T/W A
RPZ
APPROACH RUNWAY PROTECTION ZONE (RPZ) 500' X 1010' X 1700'
EXISTING PUBLIC ACCESS ROADWAY, FENCES, AND OFF-AIRPORT STRUCTURES
DEPARTURE RUNWAY PROTECTION ZONE (RPZ) 500' X 1010' X 1700'
Legend
Runway Protection Zone
Airport Property Line
0
150'
300'
GRAPHIC SCALE IN FEET

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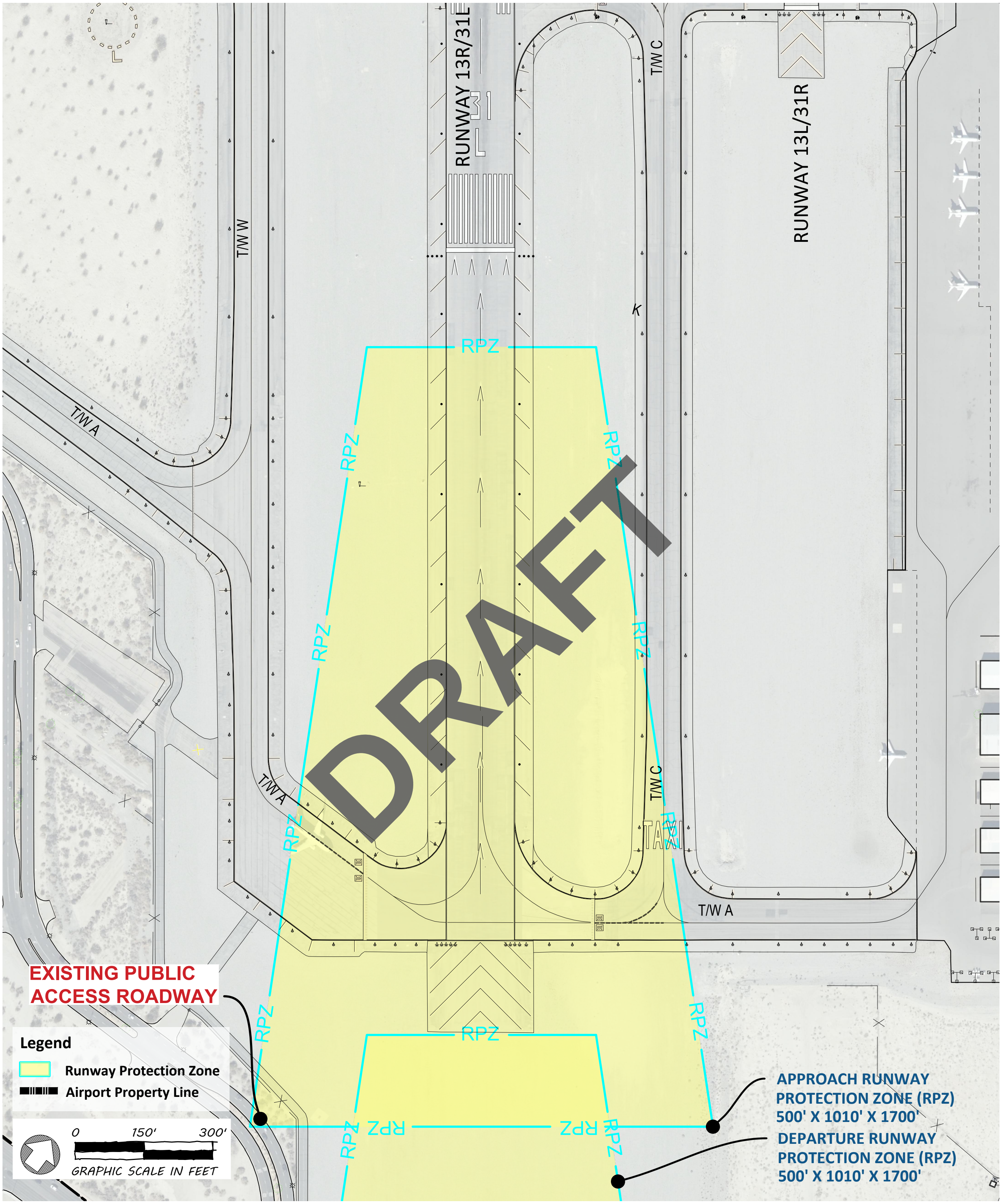
Figure 5-14: Runway 31L Approach RPZ Design Standards D-III-5000


RUNWAY 13R/31L
31 L
RUNWAY 13L/31R
T/W C
T/W W
T/W A
K
TAXI
RPZ
EXISTING PUBLIC ACCESS ROADWAY
Legend
🟨 Runway Protection Zone
▬ Airport Property Line
0 150' 300'
GRAPHIC SCALE IN FEET
APPROACH RUNWAY PROTECTION ZONE (RPZ) 500' X 1010' X 1700'
DEPARTURE RUNWAY PROTECTION ZONE (RPZ) 500' X 1010' X 1700'

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Runway 13L/31R RPZs

The land use underneath both RPZs is on airport property. As shown in **Figure 5-15** and **Figure 5-16**, both RPZs are clear of development.

RPZs Analysis Conclusion

The existing land use was determined to be compatible with each runway's RPZ so further analysis will not be conducted. Any changes to the runways that will result in a change to a RPZ in the **Alternative Analysis** chapter should be free from development in accordance with FAA design standards.

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Figure 5-15: Runway 13L RPZ Design Standards B-II (Small)-VIS

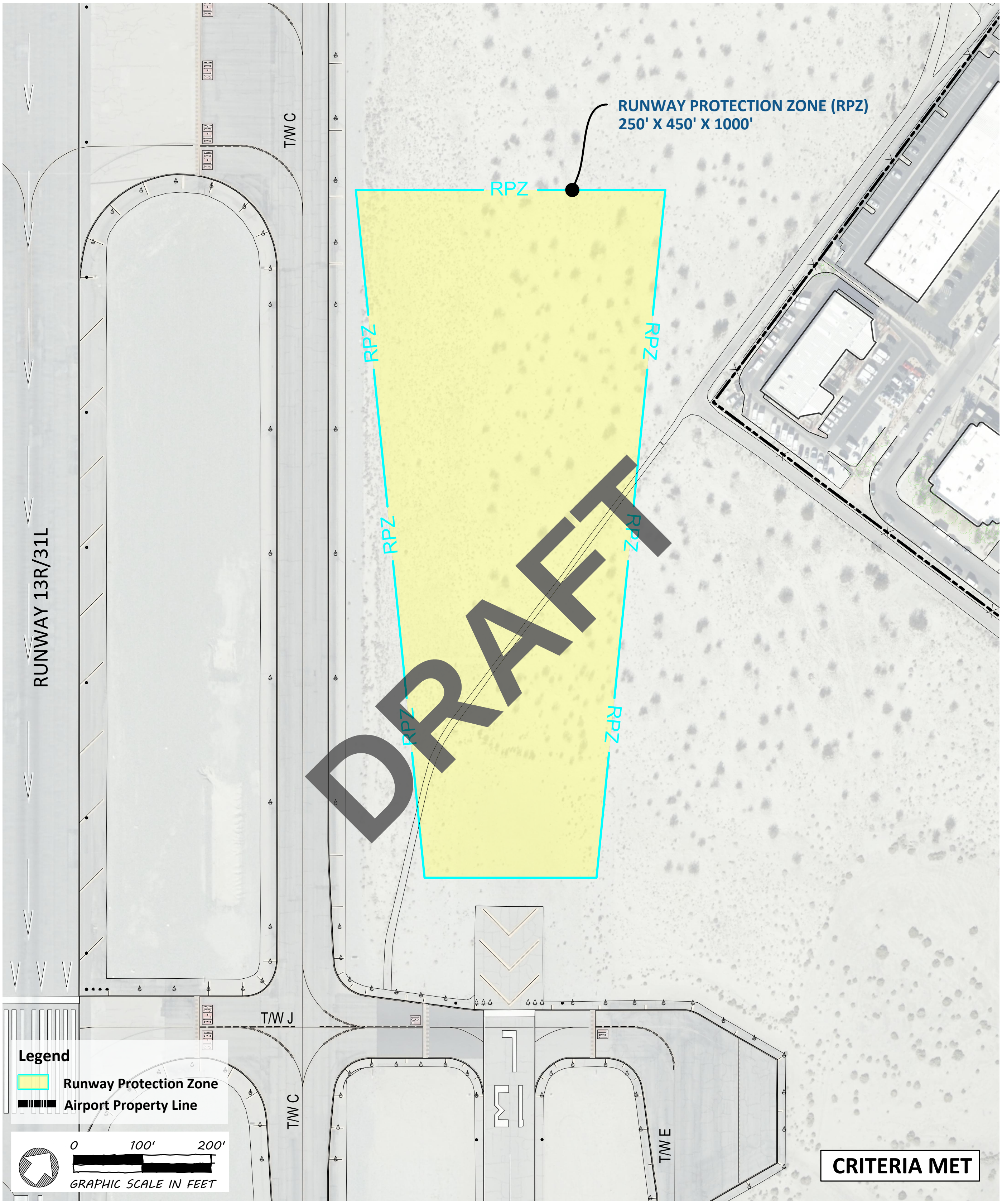
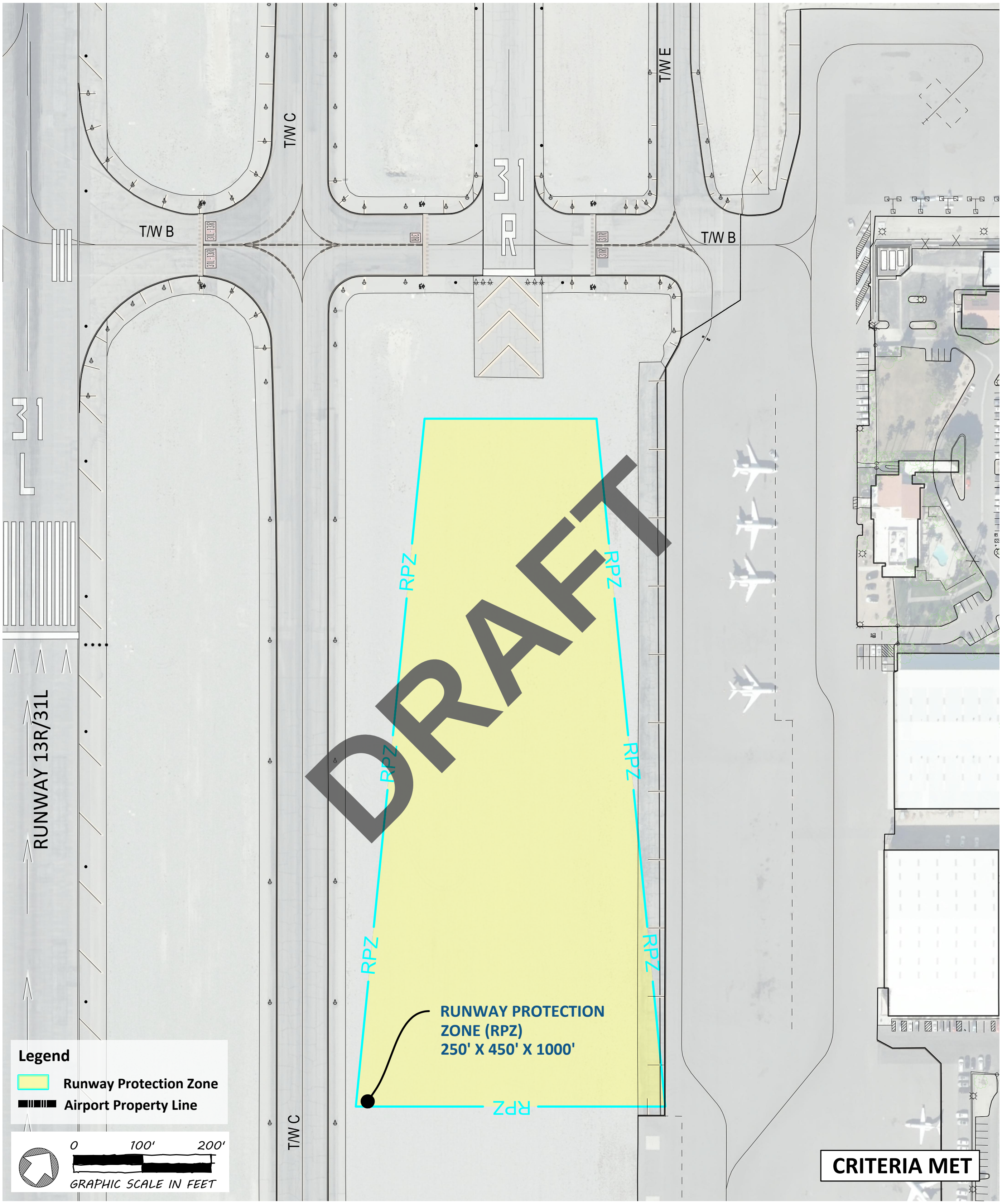

RUNWAY PROTECTION ZONE (RPZ)
250' X 450' X 1000'
RPZ
T/W C
RUNWAY 13R/31L
T/W J
T/W E
13
DRAFT
Legend
Runway Protection Zone
Airport Property Line
0
100'
200'
GRAPHIC SCALE IN FEET
CRITERIA MET

Figure 5-16: Runway 31R RPZ Design Standards B-II (Small)-VIS


T/W C
T/W E
31
R
T/W B
T/W B
31
L
RUNWAY 13R/31L
RPZ
RPZ
RPZ
RPZ
RPZ
RPZ
RPZ
RUNWAY PROTECTION ZONE (RPZ) 250' X 450' X 1000'
Legend
Runway Protection Zone
Airport Property Line
0
100'
200'
GRAPHIC SCALE IN FEET
T/W C
CRITERIA MET

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Runway End Siting Surfaces

Criteria contained in AC 150/5300-13B provides guidance for the proper siting of runway ends and thresholds. The criteria are in the form of evaluation surfaces that are typically trapezoidal shaped and extend away from the runway ends along the centerline at a specific slope, expressed in horizontal feet by vertical feet. The specific size, slope, and starting point of the trapezoid depends upon the visibility minimums and the type of procedure associated with the runway end. The existing criteria for PSP are presented in **Table 5-12**.

Table 5-12: Runway End Siting Criteria

Runway Type	Distance from Runway End	Width at Inner Edge	Length	Width at Outer Edge	Slope
Existing Approach Surface					
Runway 13R/31L					
Runway 13R (Type 5)	200’	400’	10,000’	3,400’	20:1
Runway 13R (Type 6)	0’	350’	10,200’	1,520’	30:1
Runway 13R (Type 7)	0’	150’	12,152’	7,512’	40:1[1] 2.83:1[2]
Runway 31L (Type 5)	200’	400’	10,000’	3,400’	20:1
Runway 31L (Type 6)	0’	350’	10,200’	1,520’	30:1
Runway 31L (Type 7)	0’	150’	12,152’	7,512’	40:1[1] 2.83:1[2]
Runway 13L/31R					
Runway 13L (Type 2)	0’	250’	5,000’	700’	20:1
Runway 13L (Type 7)	0’	75’	12,152’	7,512’	40:1[1] 3.08:1[2]
Runway 31R (Type 2)	0’	250’	5,000’	700’	20:1
Runway 31R (Type 7)	0’	75’	12,152’	7,512’	40:1[1] 3.08:1[2]

Sources: *Mead & Hunt, 2023; FAA Advisory Circular 150/5300-13B.*

Notes: *[1] Section 1 slope.*
[2] Section 2 slope.

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Approach Surfaces Analysis

Thresholds are located to provide proper clearance over obstacles for landing aircraft on approach to a runway end. When an object that is beyond an airport owner’s ability to remove, relocate, or lower obstructs the airspace required for aircraft to land at the beginning of the runway for takeoff, the landing threshold may require a location other than the end of the pavement (i.e., a displaced threshold). Like the RPZ criteria, the approach surface criteria are based on the type of aircraft and approach visibility minimums associated with each runway end. Both runway ends for Runway 13R/31L have two types of approach surface, but both runway ends for Runway 13L/31R have a single type of approach surface. Obstructions, if any, to each runway’s approach surfaces are listed below:

Runway 13R/31L

- Runway 13R Approach Surface Type 5 with 0 Obstructions
- Runway 13R Approach Surface Type 6 with 2 Obstructions
- Runway 31L Approach Surface Type 5 with 0 Obstructions
- Runway 31L Approach Surface Type 6 with 2 Obstructions

Runway 13L/31R

- Runway 13L Approach Surface Type 2 with 2 Obstructions
- Runway 31R Approach Surface Type 2 with 3 Obstructions

Departure Surfaces Analysis

Departure ends of runways normally mark the end of the full-strength runway pavement available and suitable for departures. Departure surfaces, when clear of obstacles, allow pilots to follow standard departure procedures. If obstacles penetrate the departure surface, then the obstacles must be evaluated through the Obstruction Evaluation/Airport Airspace Analysis (OE/AAA) process. After the OE/AAA process, departure procedure amendments such as non-standard climb rates, non-standard (higher) departure minimums, or a reduction in the length of Takeoff Distance Available (TODA) may be required. Departure surfaces begin at the end of the TODA, are trapezoidal in shape, extend along the extended runway centerline, and have a slope of 40:1 for Section 1 and a transverse slope for Section 2, which is dependent on the runway width. Obstructions, if any, to each runway's departure surfaces are listed below:

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Runway 13R/31L

- Runway 13R Departure Surface Type 7 with 101 Obstructions
- Runway 31L Departure Surface Type 7 with 5 Obstructions

Runway 13L/31R

- Runway 13L Departure Surface Type 7 with 0 Obstructions
- Runway 31R Departure Surface Type 7 with 0 Obstructions

Code of Federal Regulations Part 77

Safe and efficient landing and takeoff operations at an airport require that certain areas on and near the airport are clear of objects or restricted to objects with certain function, composition, and/or height. Obstruction clearing standards and criteria are established to create a safer environment for aircraft operations on or near the airport. Any existing or proposed object, whether man-made or of natural growth that penetrates obstruction clearance surfaces is classified as an obstruction and is presumed to be a hazard to air navigation. These obstructions are subject to FAA aeronautical study, after which the FAA issues a determination stating if the obstruction is in fact considered a hazard.

The criteria contained in Code of Federal Regulations (CFR), *Part 77 Safe, Efficient Use, and Preservation of Navigable Airspace*, apply to existing and proposed manmade objects and/or objects of natural growth and terrain. These guidelines define the critical areas in the vicinity of an airport that should be kept free of obstructions. Secondary areas may contain obstructions if they are determined to be non-hazardous by aeronautical study and/or if they are marked and lighted as specified in the aeronautical study determination. Airfield navigational aids, as well as lighting and visual aids, by nature of their location, may constitute obstructions. However, these objects do not violate CFR Part 77 requirements, as they are essential to the operation of the Airport.

The surfaces contained in CFR Part 77, commonly referred to as Part 77 Imaginary Surfaces, are summarized below:

- **Primary Surface.** Longitudinally centered on the runway with an elevation equal to the nearest point on the runway centerline. The primary surface extends 200 feet beyond each runway end at PSP. The width of the primary surface for Runway 13R/31L is 500 feet and 250 feet for Runway 13L/31R.
- **Approach Surface.** Begins at the edge of the primary surface (200 feet beyond each runway end for each runway at PSP). The dimensions of the approach surface depend on the approach capabilities of each runway end and are summarized below:
    - **Runway 13R and 31L**: Inner width of 500 feet, length of 10,000 feet, outer width of 3,500 feet, and a slope of 34 to 1 (horizontal to vertical).
    - **Runway 13L and 31R**: inner width of 250 feet, length of 5,000 feet, outer width of 1,250 feet, and a slope of 20:1 (horizontal to vertical).
- **Transitional Surface.** Begins at the edges of the primary and approach surfaces. The transitional surface extends upward and outward at a slope of 7 to 1 (horizontal to vertical) for a total horizontal distance of 5,000 feet.
- **Horizontal Surface.** A plane 150 feet above the established airport elevation that is constructed by swinging arcs of specified radii from the center end of the primary surface of each runway and connecting adjacent arcs with tangent lines. The radius for the arcs on Runway 13R/31L is 10,000 feet and the radius for the arcs on Runway 13L/31R is 5,000 feet.
- **Conical Surface.** Extends upward and outward from the horizontal surface at a slope of 20 to 1 (horizontal to vertical) for a total horizontal distance of 4,000 feet.

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CFR Part 77 Approach Surface Obstructions

Runway 13R/31L

- Runway 13R Approach Surface with 34 Obstructions
- Runway 31L Approach Surface with 7 Obstructions

Runway 13L/31R

- Runway 13L Approach Surface with 0 Obstructions
- Runway 31R Approach Surface with 0 Obstructions

The specific mapping of the various CFR Part 77 imaginary surfaces for each runway at PSP and the known associated obstacle and terrain penetrations of these surfaces will be prepared as sheets of the ALP Drawing Set. The ALP set will include proposed dispositions for each obstruction for each surface.

Instrumentation and Lighting

The Airport is currently looking at a new Required Navigation Performance approach for Runway 13R/31L. Any additional future approach lighting system (ALS) improvements to Runway 13R/31L will be evaluated in conjunction with the findings of the obstruction survey and the alternatives development analysis presented in the following chapter. There are no future ALS improvements recommended for Runway 13L/31R.

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NAVAIDs and Airfield Lighting

Navigational aids (NAVAIDs) and airfield lighting assist pilots with navigation, takeoffs, and landings especially during times of low visibility. AC 150/5300-13B provides standards and recommended practices for both NAVAIDs and airfield lighting. The existing NAVAIDs at PSP are understood to meet FAA standards. Various existing NAVAIDs may require relocation as a result of potential projects including but not limited to:

- **Terminal Apron Expansion** – may require the Automated Surface Observing Systems (ASOS) and segmented circle and wind cone to relocate.
- **Runway Extensions** – may require precision approach path indicators (PAPIs), runway end identifier lights (REILs), and wind cones to relocate.
- **Aviation-Related Development** – may require the Airport Surveillance Radar (ASR) to relocate.

Any relocation of NAVAIDs and airfield lighting will comply with FAA standards. The applicable FAA standards for the NAVAIDs listed above are summarized below.

ASOS Criteria

An ASOS is a climate recording instrument that measures cloud cover and ceiling, visibility, wind speed and direction, temperature, dew point, precipitation accumulation, icing, and sea level pressure for altimeter settings. This information assists pilots with flight procedures. ASOS siting criteria depends on the runway approach types at the airport and whether they have runway visual range (RVR) instrumentation. Runway 13R/31L is an instrument approach runway without RVR instrumentation; therefore, siting criteria indicates that the sensors be:

- Located 1,000 to 3,000 feet from the primary runway threshold (Runway 31L since it is the end with lowest visibility minimums).

- Located 500 to 1,000 feet from the runway centerline.
- Must remain outside of RSAs and ROFAs.
- Obstructions must be at least 15 feet lower than the height of the sensor within the 500-foot radius and be at least 10 feet lower than the height of the sensor from 500 to 1,000 feet.

Segmented Circle and Wind Cones Criteria

Segmented circles and wind cones visually indicate prevailing wind directions that assist pilots with the direction in which they should operate. The primary wind cone typically is located within a segmented circle. Siting criteria includes:

- Must remain outside of RSAs and ROFAs.
- The primary wind cone must be readily visible to pilots.
- Supplemental wind cones should be placed 1,000 feet from the runway threshold.

PAPIs and REILs Criteria

PAPIs assist pilots with their approaches by visually indicating whether they are approaching too high or too low. PAPIs siting criteria includes:

- Ideally located on left side of approach runway.
- Site and aim PAPI so there is sufficient clearance over obstacles.
- Site PAPI to be approximately 1,000 feet from runway threshold.
- Is considered fixed-by-function and therefore is allowed in both the RSA and ROFA.

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REILs help pilots identify the runway end. REILs siting criteria includes:

- Lights may be placed 30 feet downwind and 100 feet upwind of the runway threshold lights.
- Locate a minimum of 40 feet from runway or taxiway.
- Is considered fixed-by-function and therefore is allowed in both the RSA and ROFA.

ASR Criteria

An ASR is a radar that detects and displays azimuth, range, and elevation of aircraft operating within terminal airspace. ASR siting criteria includes:

- Must remain outside RSAs and ROFAs.
- Typical ASRs range from 17 to 77 feet above ground level with a standard antenna tower 24 feet by 24 feet.
- Locate buildings and other facilities at least 1,500 feet from ASR antennas to avoid potential signal reflections.
- Locate electronic equipment at least half a mile from ASR antennas.
- Ensure trees and structures remain below the elevation of the ASR mezzanine level.

Taxiway Design

Taxiways provide defined movement corridors for aircraft between the various functional landside areas on an airport and the runway system. Some taxiways are necessary simply to provide access between aircraft parking aprons and runways, whereas other taxiways become necessary to provide more efficient and safer use of the airfield. Parallel taxiways eliminate the use of the runway for taxiing, thus increasing capacity and protecting the runway under low visibility conditions. Taxiway turns and intersections are designed for safe and efficient taxiing by aircraft while minimizing excess pavement. The common taxi routes for arrivals and departures at PSP are depicted on **Figure 5-17** and **Figure 5-18**, respectively. These routes were provided by ATCT personnel.

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Figure 5-17: Existing Taxi Routes - Arrivals

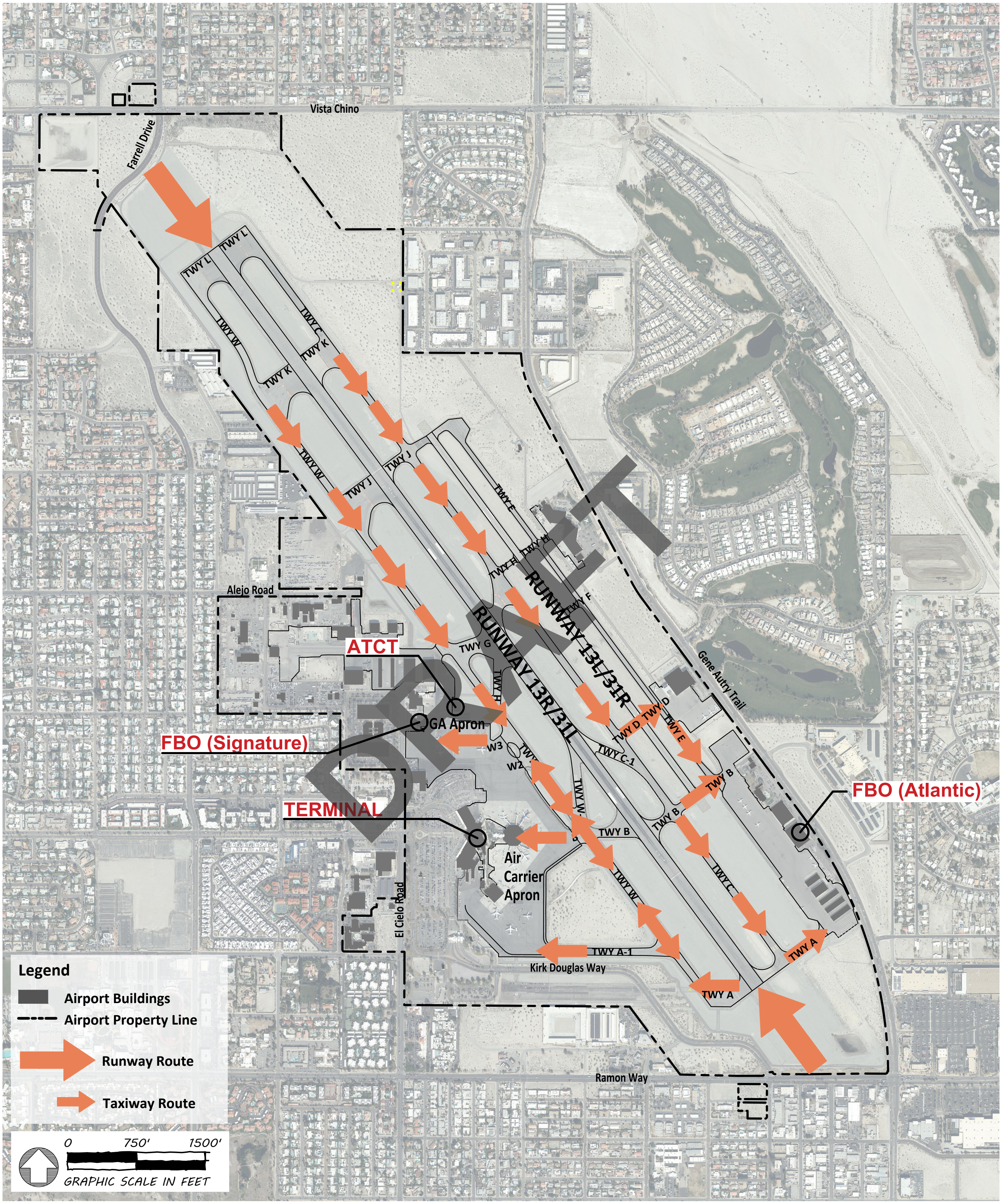
Vista Chino
Farrell Drive
TWY L
TWY L
TWY W
TWY C
TWY K
TWY K
TWY J
TWY J
TWY W
TWY E
TWY H
TWY H
RUNWAY 13L/31R
RUNWAY 13R/31L
TWY F
Alejo Road
TWY G
ATCT
GA Apron
FBO (Signature)
W3
W2
TWY C-1
TWY D
TWY D
TWY E
Gene Autry Trail
TWY B
FBO (Atlantic)
TERMINAL
TWY B
TWY B
TWY W
Air Carrier Apron
TWY W
TWY C
El Cielo Road
TWY A-1
Kirk Douglas Way
TWY A
TWY A
Ramon Way
Legend
Airport Buildings
Airport Property Line
Runway Route
Taxiway Route
0
750'
1500'
GRAPHIC SCALE IN FEET

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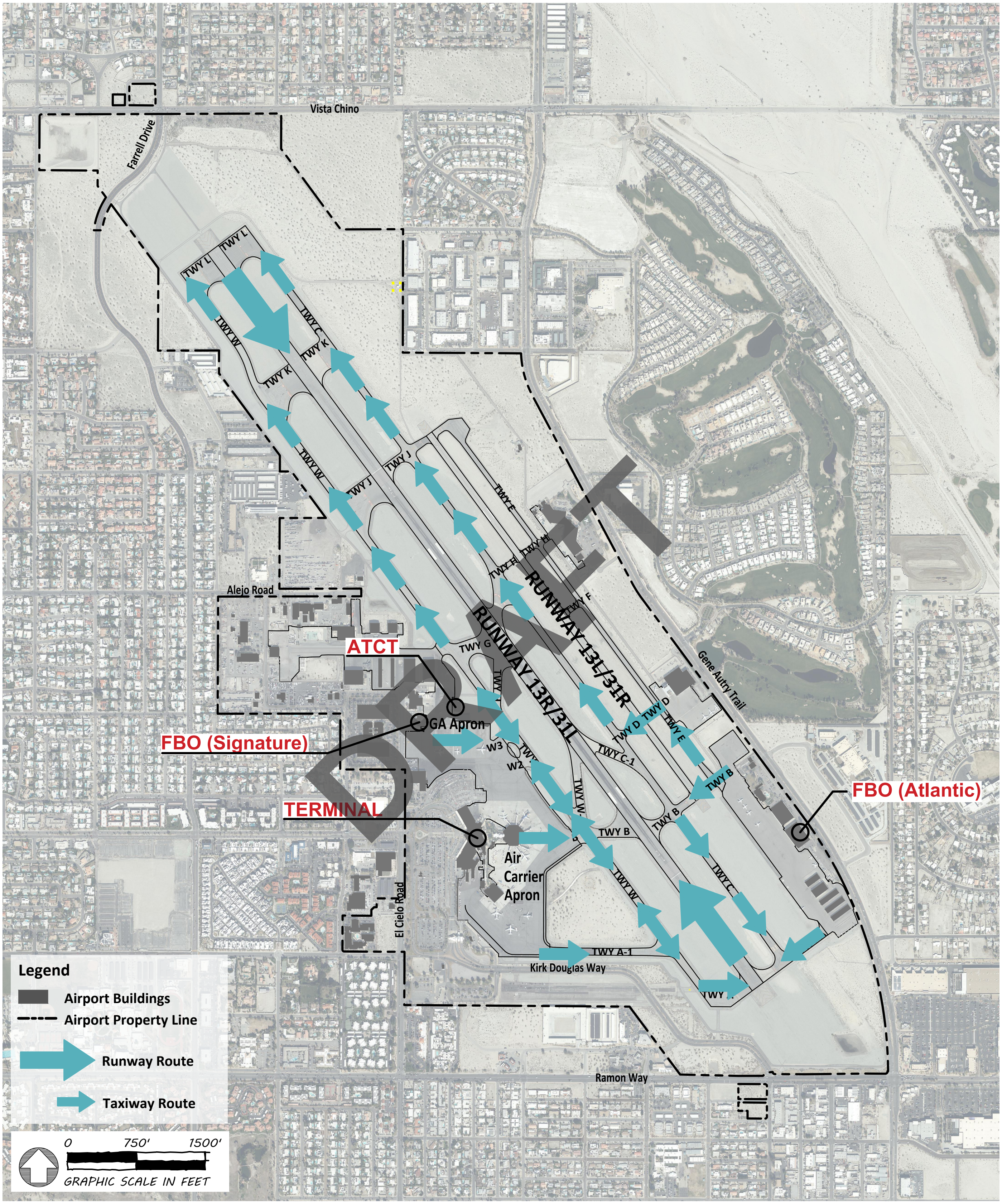
Figure 5-18: Existing Taxi Routes - Departures


Vista Chino
Farrell Drive
TWY L
TWY L
TWY W
TWY C
TWY K
TWY K
TWY W
TWY J
TWY J
TWY E
TWY H
TWY H
RUNWAY 13L/31R
TWY F
Alejo Road
ATCT
TWY G
RUNWAY 13R/31L
TWY D
TWY D
TWY E
Gene Autry Trail
GA Apron
FBO (Signature)
W3
W2
TWY C-1
TWY B
FBO (Atlantic)
TERMINAL
TWY W
TWY B
TWY B
Air Carrier Apron
TWY C
TWY W
TWY A-1
Kirk Douglas Way
El Cielo Road
TWY A
Ramon Way
Legend
Airport Buildings
Airport Property Line
Runway Route
Taxiway Route
0
750'
1500'
GRAPHIC SCALE IN FEET

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Taxiway Design Methodology

Taxiways are designed for cockpit over centerline taxiing with pavement being of sufficient width to allow a certain amount of wander. Potential runway incursions should be kept to a minimum by proper taxiway design, choosing simplicity over complexity wherever possible. AC 150/5300-13B provides basic taxiway design concepts and methodologies that are outlined in the following narrative and are depicted on **Figure 5-19** through **Figure 5-21**.

- **Increased Pilot Awareness.** Taxiway intersections should be kept simple by using the three-node concept, which means that a pilot is presented with no more than three choices at each intersection – ideally, left, right, and straight ahead. Intersection angles should be 90 degrees wherever possible, but standard angles of 30, 45, 60, 120, 135, and 150 degrees are acceptable.
- **Wide Expanses of Pavement.** Taxiway to runway interface encompassing wide expanses of pavement should be avoided, as wide pavements require placement of signs far from a pilot's eyes and reduce the conspicuity of other visual cues. Taxiways A, G, H, J, K, and L currently have wide expanses of pavement.
- **Limit Runway Crossing.** Opportunities for human error can be reduced by limiting the need for runway crossings, especially crossings within the middle third of runways defined as high energy intersections. Limiting runway crossings to the outer thirds of the runway keeps clear the portion of the runway where pilots can least maneuver to avoid collisions. Taxiway H crosses Runway 13R/31L in the middle third of the runway.
- **Increase Visibility.** Right-angle intersections, both between taxiways and between taxiways and runways, provide the best visibility to the left and right for a pilot. A right-angle turn at the end of the parallel taxiway is a clear indication of approaching a runway. Acute-angle exit taxiways provide greater runway efficiency but should not be used for runway entrance or crossing points. Taxiway A is a non-right-angle entrance, and Taxiway H is an angled crossing point.
- **Avoid Dual Purpose Pavement.** Runways used as a taxiways and taxiways used as runways only lead to confusion and should be avoided. Runways should be clearly identified as a runway and only a runway. All the runways and taxiways serve only their designated purpose.
- **Indirect Access.** Taxiways should not lead directly from an apron to a runway without requiring a turn. This layout only leads to confusion when a pilot typically expects to encounter a parallel taxiway. PSP has several locations of direct access including:
    - Taxiway A from east apron to Runway 31L
    - Taxiway B from both aprons to both runways
    - Taxiway D from east apron to Runway 31R
    - Taxiway G from west apron Runway 13R/31L.
- **Hot Spots.** In recent years, PSP has seen a number of incidents at four hot spots on the airfield. In response, the Airport created the Runway Safety Action Team (RSAT) to evaluate ways to eliminate the four hot spots on the airfield. RS&H led the efforts in the hot spot study and recommendations from the study will be discussed in the **Alternative Analysis** chapter.

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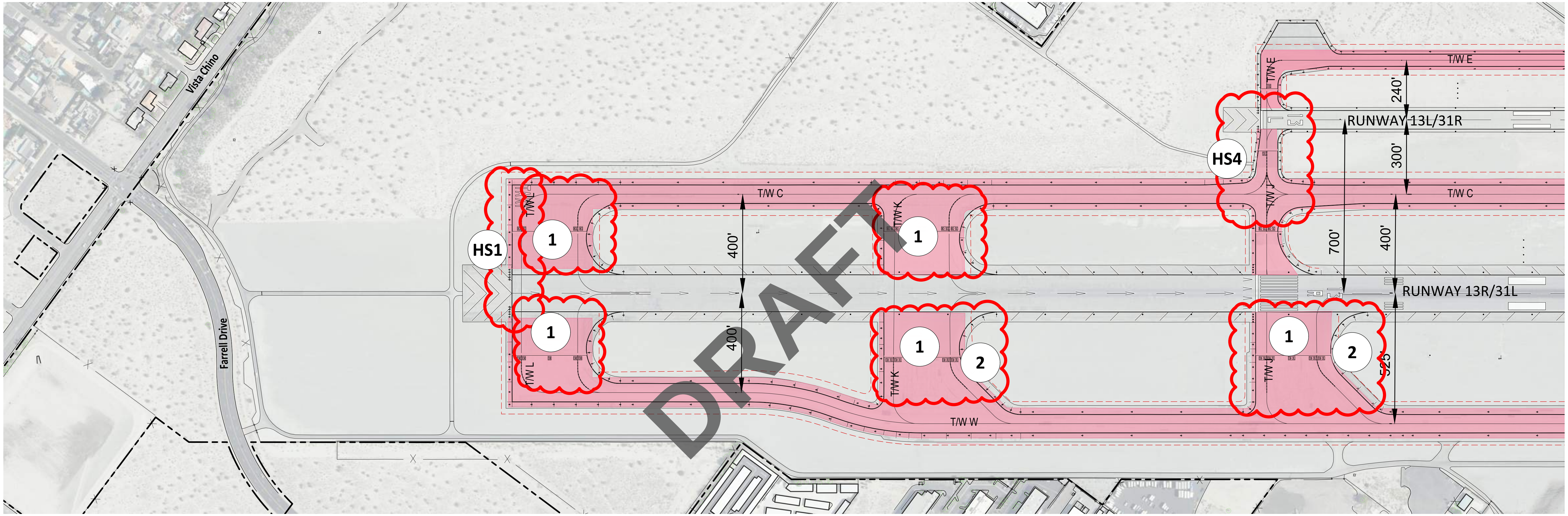
Figure 5-19: Existing Taxiway Design Standards - North Detail


Vista Chino
Farrell Drive
HS1
HS4
T/W L
T/W C
T/W K
T/W E
T/W J
T/W W
RUNWAY 13L/31R
RUNWAY 13R/31L
240'
300'
400'
400'
700'
400'
525'
1
2
DRAFT

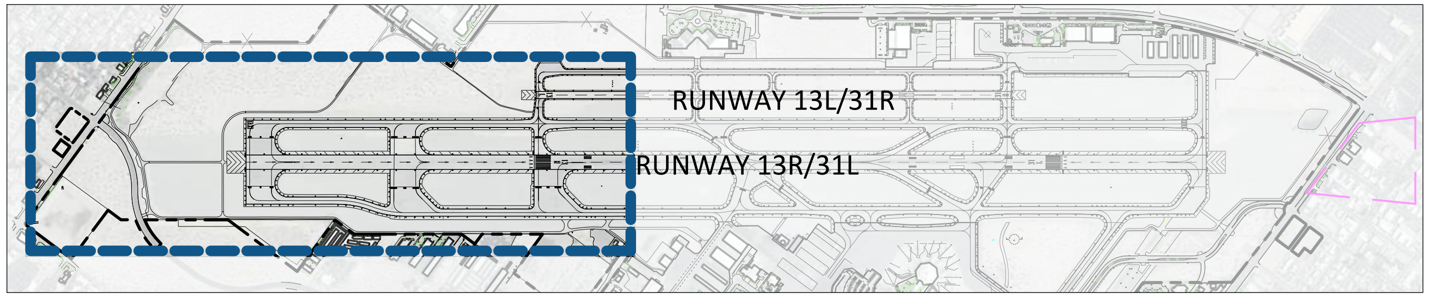
0 200' 400'
GRAPHIC SCALE IN FEET

Legend

🟥 Taxiway Safety Area

⬚ Taxiway Object Free Area

---- Airport Property Line


RUNWAY 13L/31R
RUNWAY 13R/31L

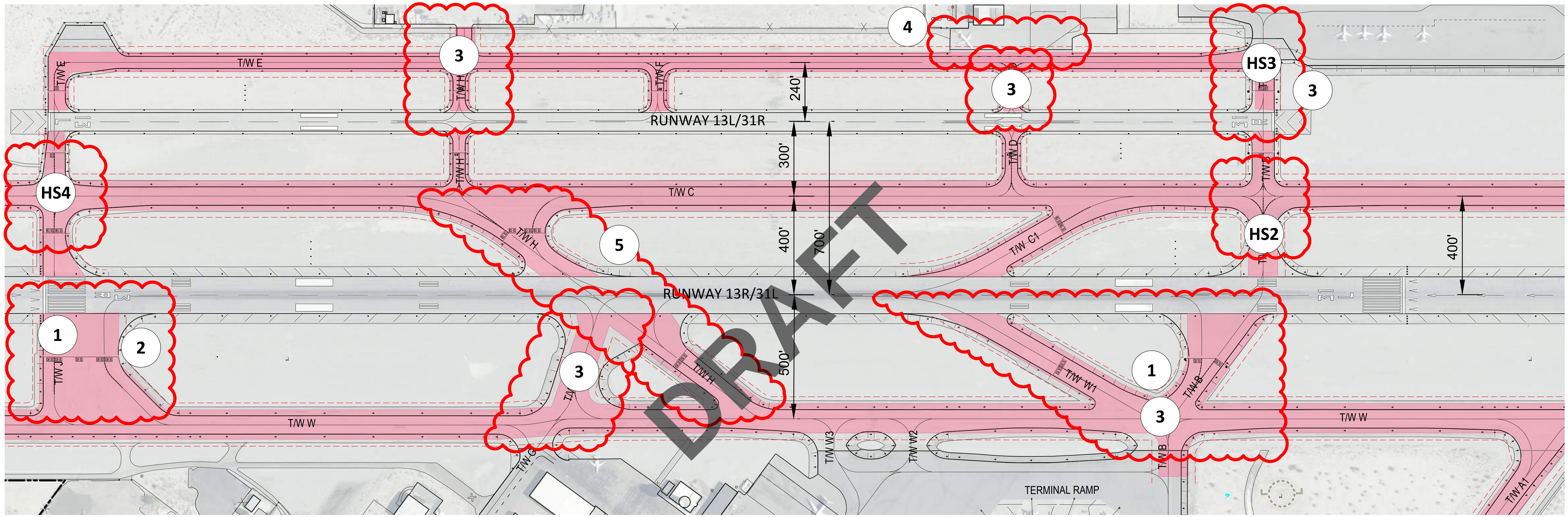
Keymap

0 1000' 2000'
GRAPHIC SCALE IN FEET

Non-Standard Taxiway Condition

①	Wide Pavement
②	Aircraft does not hold 90 degrees
HS1	Taxiway C mistaken for Runway 13R/31L
HS4	Aircraft taxiing to Taxiway E from Runway 13R/31L mistake Runway 13L for Taxiway E

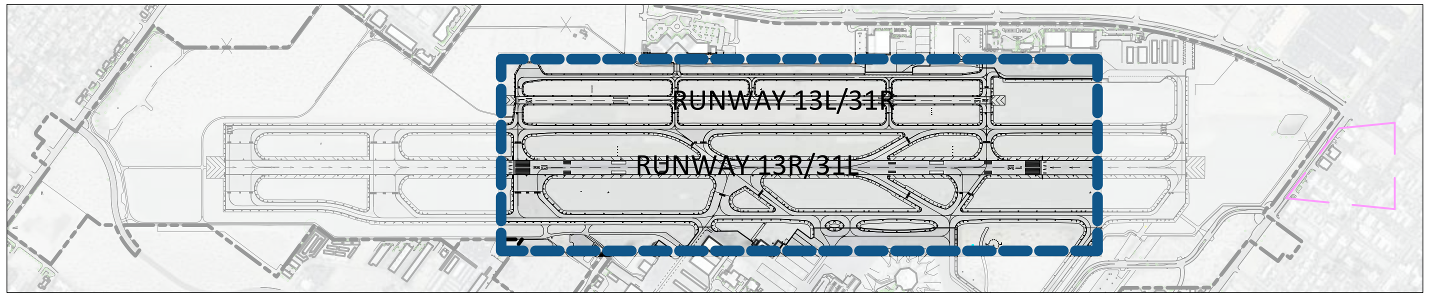
Figure 5-20: Existing Taxiway Design Standards - Central Detail


T/W E
T/W H
T/W F
240'
RUNWAY 13L/31R
300'
T/W D
T/W C
400'
700'
T/W H
T/W C1
RUNWAY 13R/31L
500'
400'
T/W J
T/W G
T/W W
T/W W3
T/W W2
T/W W1
T/W B
T/W A1
TERMINAL RAMP
HS2
HS3
HS4
1
2
3
4
5
0 200' 400'
GRAPHIC SCALE IN FEET

DRAFT

Legend

- 🟥 Taxiway Safety Area
- ▭ Taxiway Object Free Area
- - - - Airport Property Line

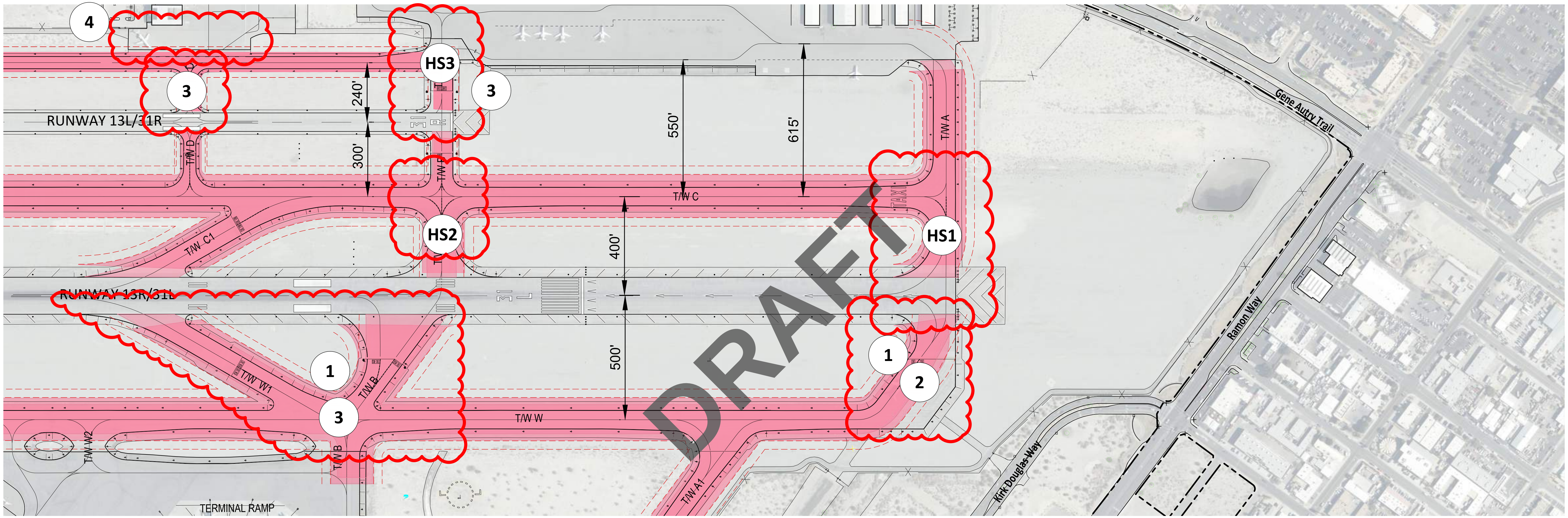

RUNWAY 13L/31R
RUNWAY 13R/31L
0 1000' 2000'
GRAPHIC SCALE IN FEET

Keymap

Non-Standard Taxiway Condition

① Wide Pavement
② Aircraft does not hold 90 degrees
③ Direct access
④ Aircraft parking on apron inside TOFA
⑤ Taxiway crossing in middle third of runway
HS2 Aircraft miss turn on Taxiway C and enter Runway 13R/31L without authorization
HS3 Aircraft miss Hold Short line
HS4 Aircraft taxiing to Taxiway E from Runway 13R/31L mistake Runway 13L for Taxiway E

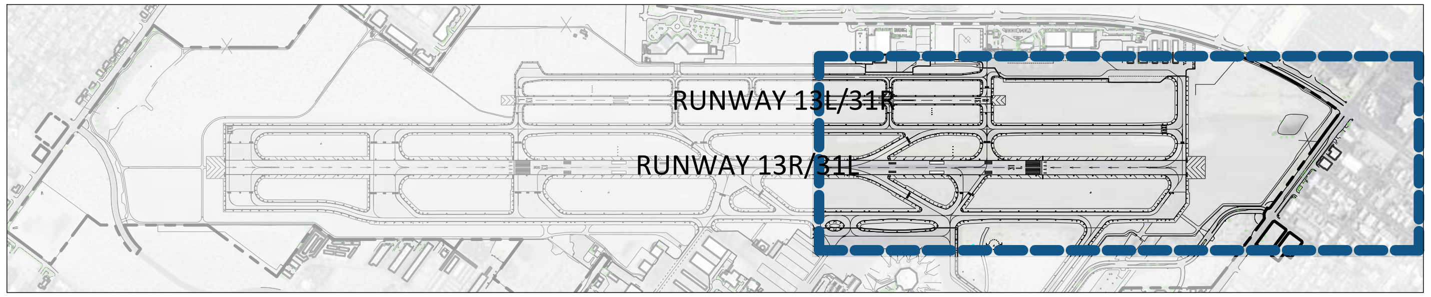
Figure 5-21: Existing Taxiway Design Standards - South Detail


4
3
HS3
3
RUNWAY 13L/31R
240'
300'
550'
615'
T/W D
T/W E
T/W A
T/W C
T/W C1
HS2
HS1
400'
RUNWAY 13R/31L
500'
1
3
T/W W1
T/W B
1
2
T/W W
T/W W2
T/W A1
TERMINAL RAMP
Gene Autry Trail
Ramon Way
Kirk Douglas Way
DRAFT

0 200' 400'
GRAPHIC SCALE IN FEET

Legend

- 🟥 Taxiway Safety Area
- ⬚ Taxiway Object Free Area
- ---- Airport Property Line


RUNWAY 13L/31R
RUNWAY 13R/31L

Keymap

0 1000' 2000'
GRAPHIC SCALE IN FEET

Non-Standard Taxiway Condition

①	Wide Pavement
②	Aircraft does not hold 90 degrees
③	Direct access
④	Aircraft parking on apron inside TOFA
HS1	Taxiway C mistaken for Runway 13R/31L
HS2	Aircraft miss turn on Taxiway C and enter Runway 13R/31L without authorization
HS3	Aircraft miss Hold Short line

Taxiway Design Conclusion

Each of the taxiway systems at PSP will be examined in consideration of these taxiway design concepts and methodologies in conjunction with the alternatives analysis presented in the following chapter, and potential taxiway reconfiguration recommendations will be identified. Reconfiguration of taxiways will be discussed with ATCT personnel to coordinate a safe and efficient airfield.

Taxiway Dimensional Criteria

Taxiway and taxilane clearance requirements are the required distances between a taxiway/taxilane centerline and other objects, which are based upon the required wingtip clearance, a function of the wingspan, and therefore are determined by the ADG as it relates to the critical aircraft. Taxiway and taxilane pavement design standards are related to the TDG, which is based on the overall main gear width and the cockpit to main gear distance of the critical aircraft. Based on the approved aviation forecast presented in the **Aviation Activity Forecast** chapter and ATCT discussions, it was determined that ADG III and TDG 3 are the appropriate design standards for the west taxiway system, while ADG II and TDG 2B are the appropriate design standards for the east taxiway system. However, certain taxiways (i.e., Taxiway E) on the east side of the Airport should allow for an ADG III aircraft to taxi as business jets taxi to and from the fixed-base operator (FBO). **Table 5-13** summarizes current FAA design standards. **Table 5-14** presents the existing dimensional criteria for each taxiway and documents its ability to meet current FAA standards.

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Table 5-13: Taxiway Design Standards

Item	ADG II	ADG III
Taxiway Safety Area	79’	118’
Taxiway Object Free Area	124’	171’
Taxiway Centerline to parallel Taxiway/Taxilane centerline	102’	145’
Taxiway Centerline to Fixed or Movable Object	62’	86’
Taxiway Wingtip Clearance	23’	27'
Item	**TDG 2B**	**TDG 3**
Taxiway Width	35’	50’
Taxiway Edge Safety Margin	7.5’	10’
Taxiway Shoulder Width	15’	20’

Sources: *Mead & Hunt, 2023; AC 150/5300-13B.*

Table 5-14: PSP Taxiway Design Standards Evaluation

Taxiway Segment	Width	Shoulder	TOFA [1]	Standards Met
A	90-190’	25’	171’	Yes
A1	75’	25’	171’	Yes
B	75’-150’	25’	124’ – 171’	Yes
C	75’	25’	171’	Yes
C1	75’	25’	171’	Yes
D	50’	**12’**	124’	**No**
E	50’	**12’**	**124’**[2]	**No**
F	50’	**12’**	124’	**No**
G	165’	35’	171’	Yes
H	85’-215’	**12’**-35’	124’ – 171’	**No**
J	50’-300’	25’	171’	Yes
K	300’	25’	171’	Yes
L	300’	25’	171’	Yes
W	75’	35’	171’	Yes
W1	75’	35’	171’	Yes
W2	125’	35’	171’	Yes
W3	130’	35’	171’	Yes

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Sources: *Mead & Hunt, 2023; AC 150/5300-13B; NV5 Survey.*

Notes: *[1] TOFA – Taxiway Object Free Area.*

[2] Aircraft apron is inside TOFA.

The taxiway dimensional standards are mostly met; however, several of the taxiway shoulders do not meet the minimum standard shoulder widths. The ALP will indicate that the future taxiway conditions meet the standard shoulder widths. In addition, a portion of Taxiway E’s TOFA does not meet standards because an aircraft parking apron fall inside the TOFA. It is recommended to restripe a portion of the apron to indicate aircraft should not park inside the limits of the TOFA.

Several of the existing taxiways, especially those on the west side of the airfield, measure 75 feet or more in width (exceeds standards). For funding purposes, the Airport recently completed a cost-benefit analysis of the reconstruction of Taxiway W, that showed the cost of retaining the existing taxiway width at 75 feet would be less than t he cost of reducing the taxiway width to meet critical aircraft guidance. For this reason, the FAA will permit the Airport to maintain Taxiway W’s existing width. It is recommended to complete cost-benefit analysis for the taxiways that exceed dimensional standards, as needed, in case the findings from the analysis are similar to those of Taxiway W.

Taxiway Dimensional Criteria for Potential Widebody Scenario

As discussed in the **Runway Length Analysis** section above, the Airport is working with *Visit Greater Palm Springs* to explore the possibility of international widebody flights between PSP and European destinations. Although the FAA approved forecast does not include any widebody enplanements, the future addition of widebody flights at PSP would also require a safe and efficient taxi route for that aircraft type. **Table 5-15** summarizes the FAA's taxiway clearance and dimensional standards (i.e., ADG V and TDG 5) for a Boeing 787-8 aircraft. **Table 5-16** evaluates the west side taxiway system's ability to meet the more restrictive standards for an ADG V and TDG 5 aircraft. The larger aircraft will only use the west side taxiways; therefore, only taxiways on the west side of the airfield were evaluated.

Table 5-15: Taxiway Design Standards for Widebody Aircraft

Item	ADG V
Taxiway Safety Area	214'
Taxiway Object Free Area	285'
Taxiway Centerline to Parallel Taxiway/Taxilane Centerline	250'
Taxiway Centerline to Fixed or Movable Object	143'
Taxiway Wingtip Clearance	36'
Item	**TDG V**
Taxiway Width	75'
Taxiway Edge Safety Margin	14'
Taxiway Shoulder Width	30'

Sources: *Mead & Hunt, 2023; AC 150/5300-13B.*

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Table 5-16: PSP Taxiway Design Standards Evaluation for Widebody Aircraft

Taxiway Segment[1]	Width	Shoulder	TOFA[2]	Standards Met
A	90’-190’	**25’**	**214’**[3]	**No**
A1	75’	**25’**	**214’**[4]	**No**
B	150’	**25’**	214’	**No**
G	165’	35’	214’	Yes
H	215’	35’	214’	Yes
J	300’	**25’**	214’	**No**
K	300’	**25’**	214’	**No**
L	300’	**25’**	214’	**No**
W	75’	35’	**214’**[3]	**No**
W1	75’	35’	214’	Yes
W2	125’	35’	214’	Yes
W3	130’	35’	214’	Yes

Sources: *Mead & Hunt; AC 150/5300-13B; NV5 Survey*

Notes: *[1] A widebody aircraft would only use the taxiways on the west side of Runway 13R/31L; therefore, only those taxiways were evaluated.*

[2] TOFA – Taxiway Object Free Area.

[3] Portion of service road inside TOFA.

[4] Several objects inside TOFA including service road, fence, and objects outside of airfield (vegetation and portion of public roadway).

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Taxiway Dimensional Criteria for a Potential Widebody Conclusion

If widebody aircraft were to begin regular service at PSP that exceed more than 500 operations per year, then several of the existing taxiways may require additional shoulder width upgrades. In addition, Taxiways A, A1, and W would have to clear their expanded Taxiway Object Free Areas (TOFAs) of any impeding objects. As noted previously, the aviation activity forecast does not support significant growth of widebody aircraft at the Airport; however, PSP does have the desire to protect for the future accommodations of these aircraft. Therefore, future taxiway modifications to accommodate the larger aircraft will be shown on the ALP for planning purposes.

Exit Taxiway Analysis

As noted in the previous section, each of the runways at PSP are served by parallel taxiway systems that serve both sides of the runways and are provided with connector/exit taxiways at various locations along the runway that are designed to varying standards and dimensions. According to the FAA taxiway design guidance provided in AC 150/5300-13B, right-angled taxiways are the standard for all runway/taxiway intersections, except where there is a need for high-speed or angled exit taxiways at congested airports to enhance throughput capacity.

Optimally located/aligned exit taxiways minimize runway occupancy times and allow the airfield to be used more efficiently. Figure 4-17 from AC 150/5300-13B provides the cumulative percentages of aircraft typically able to exit runways at specific exit taxiway locations. Percentages for both right-angled and acute-angled exit taxiway configurations are included.

As presented in **Table 5-17** and **Table 5-18**, the performance capabilities of the existing exit taxiway system for both runways at PSP has been evaluated. Based upon this analysis, the optimal exit taxiway location for each AAC is listed below:

- A – between 2,600 and 4,000 feet
- B – between 3,900 and 5,200 feet
- C – between 5,500 and 6,500 feet
- D – between 6,200 and 7,800 feet

Table 5-17: Runway 13R/31L Exit Taxiway Analysis

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Exit	Distance from Landing Threshold	AAC A		AAC B		AAC C		AAC D	
Runway 13R (West Side)		**R**	**A**	**R**	**A**	**R**	**A**	**R**	**A**
Taxiway G (A)	2,000’	23	36	3	8	0	0	0	0
Taxiway H (A)	2,200’	40	52	7	12	0	0	0	0
Taxiway W1 (A)	3,200’	94	98	42	55	0	0	0	0
Taxiway B (R)	4,700’	100	100	95	98	20	30	0	0
Taxiway A (A)	6,900’	100	100	100	100	100	100	89	92
Runway 13R (East Side)		**R**	**A**	**R**	**A**	**R**	**A**	**R**	**A**
Taxiway H (A)	3,200’	94	98	42	55	0	0	0	0
Taxiway B (R)	4,700’	100	100	95	98	20	30	0	0
Taxiway A (R)	6,900’	100	100	100	100	100	100	89	92
Runway 31L (West Side)		**R**	**A**	**R**	**A**	**R**	**A**	**R**	**A**
Taxiway H (A)	2,900’	79	89	24	34	0	0	0	0
Taxiway G (A)	3,100’	97	99	43	54	0	0	0	0
Taxiway J (R)	5,000’	100	100	98	99	40	50	2	4
Taxiway K (R)	6,700’	100	100	100	100	99	100	81	90
Taxiway L (R)	8,200’	100	100	100	100	100	100	100	100
Runway 31L (East Side)		**R**	**A**	**R**	**A**	**R**	**A**	**R**	**A**
Taxiway H (A)	3,100’	97	99	43	54	0	0	0	0
Taxiway J (R)	5,400’	100	100	100	100	62	73	10	28
Taxiway K (R)	6,700’	100	100	100	100	99	100	81	90
Taxiway L (R)	8,200’	100	100	100	100	100	100	100	100

Sources: *Mead & Hunt, 2023; AC 150/5300-13B derived from Figure 4-17.*

Note: *R = right-angle and A = acute-angle configurations.*

Table 5-18: Runway 13L/31R Exit Taxiway Analysis

Exit	Distance from Landing Threshold	AAC A		AAC B		AAC C		AAC D	
Runway 13L (West Side)		**R**	**A**	**R**	**A**	**R**	**A**	**R**	**A**
Taxiway H (R)	1,500’	2	4	0	0	-	-	-	-
Taxiway D (R)	3,500’	99	100	55	65	-	-	-	-
Taxiway B (R)	4,900’	100	100	96	98	-	-	-	-
Runway 13L (East Side)		**R**	**A**	**R**	**A**	**R**	**A**	**R**	**A**
Taxiway H (R)	1,500’	2	4	0	0	-	-	-	-
Taxiway F (R)	2,400’	48	62	9	15	-	-	-	-
Taxiway D (R)	3,500’	99	100	55	65	-	-	-	-
Taxiway B (R)	4,900’	100	100	96	98	-	-	-	-
Runway 31R (West Side)		**R**	**A**	**R**	**A**	**R**	**A**	**R**	**A**
Taxiway D (R)	1,000’	0	0	0	0	-	-	-	-
Taxiway H (R)	3,200’	94	98	42	55	-	-	-	-
Taxiway J (R)	4,900’	100	100	96	98	-	-	-	-
Runway 31R (East Side)		**R**	**A**	**R**	**A**	**R**	**A**	**R**	**A**
Taxiway D (R)	1,000’	0	0	0	0	-	-	-	-
Taxiway F (R)	2,400’	48	62	9	15	-	-	-	-
Taxiway H (R)	3,200’	94	98	42	55	-	-	-	-
Taxiway J (R)	4,900’	100	100	96	98	-	-	-	-

Sources: *Mead & Hunt,2023; AC 150/5300-13B derived from Figure 4-17.*

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Exit Taxiway Conclusion

In the **Alternatives Analysis** chapter, the existing layout and/or configuration of the exit taxiway system will be evaluated in consideration of the location analysis above. However, any future recommendations to modify the layout of the existing exit taxiway system will be coordinated with input from the PSP ATCT personnel and Airport Operations Staff.

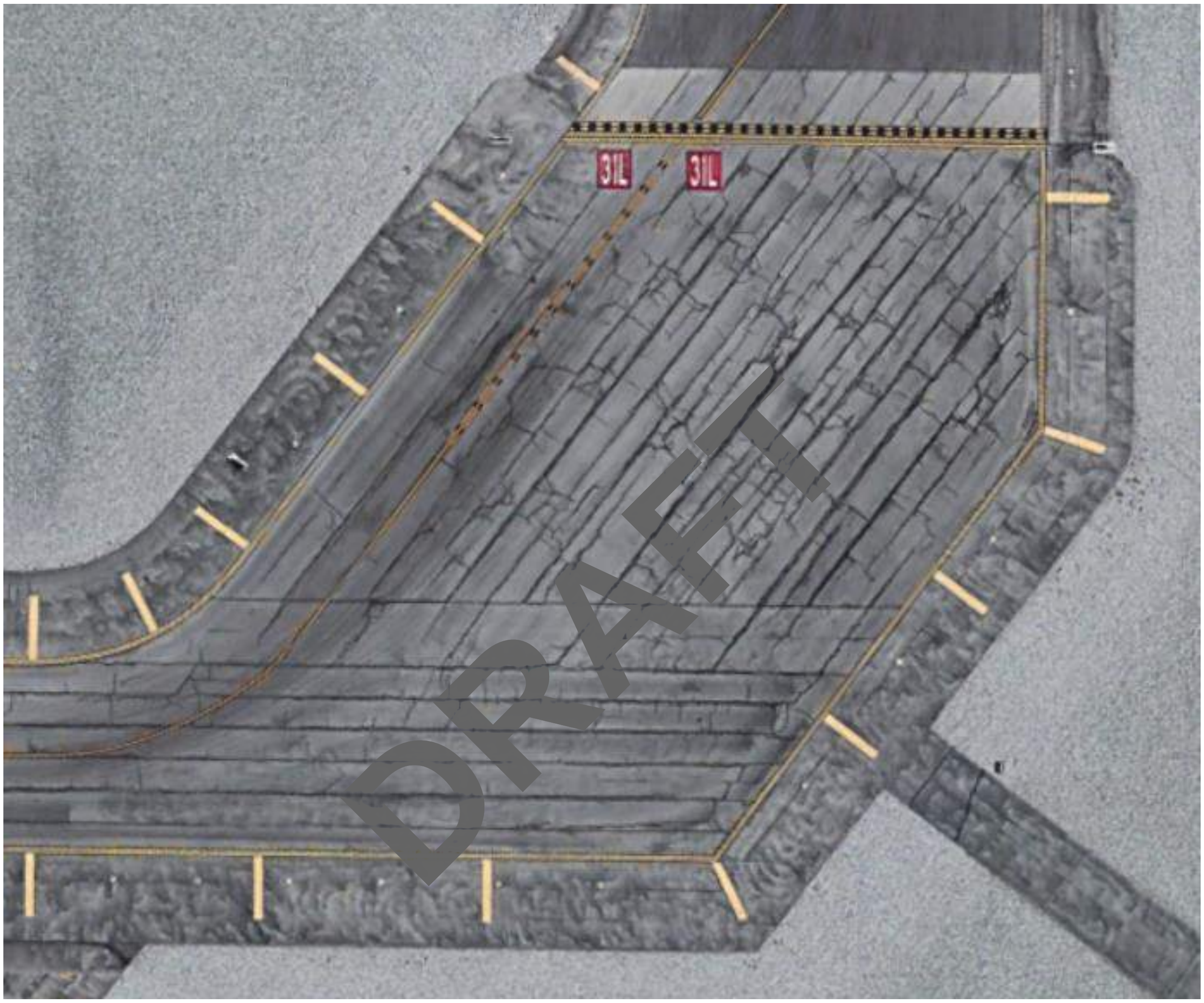
Holding Bays

PSP has two areas designated as holding bays where aircraft can wait before taking off that help aircraft move and bypass each other, enhancing airfield capacity. One holding bay is located off Runway 31L on Taxiway A (**Figure 5-22**). The other holding bay is located off Runway 13L on Taxiway E (**Figure 5-23**). Discussions with ATCT personnel were held to better understand existing issues with holding bays. The biggest issues that the ATCT noted are discussed below:

- The ATCT is not able to hold enough aircraft on the holding bay located on Taxiway A. This forces them to sometimes hold aircraft on Taxiways W2 and W3 which could potentially cause congestion around the air carrier apron.

- When landing on Runway 31L (in north flow), the ATCT faces the issue of not having anywhere to hold the arriving aircraft because its gate is not available. The aircraft are not clear to land until they have a location to park after landing.

Figure 5-22: Runway 31L Existing Holding Bay



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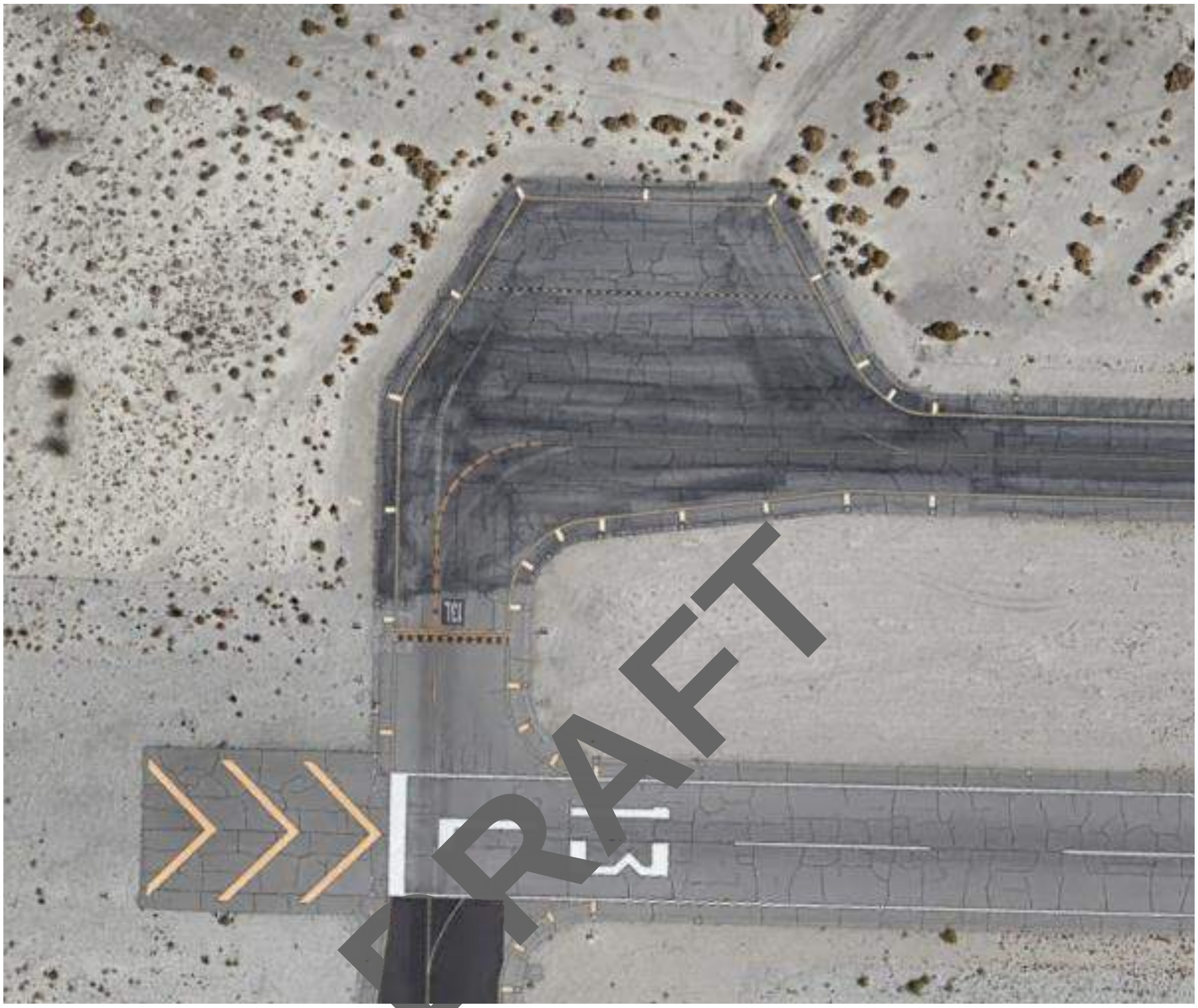
Source: *Google Earth, 2023.*

***Note**:* *Not to scale.*

Figure 5-23: Runway 13L Existing Holding Bay



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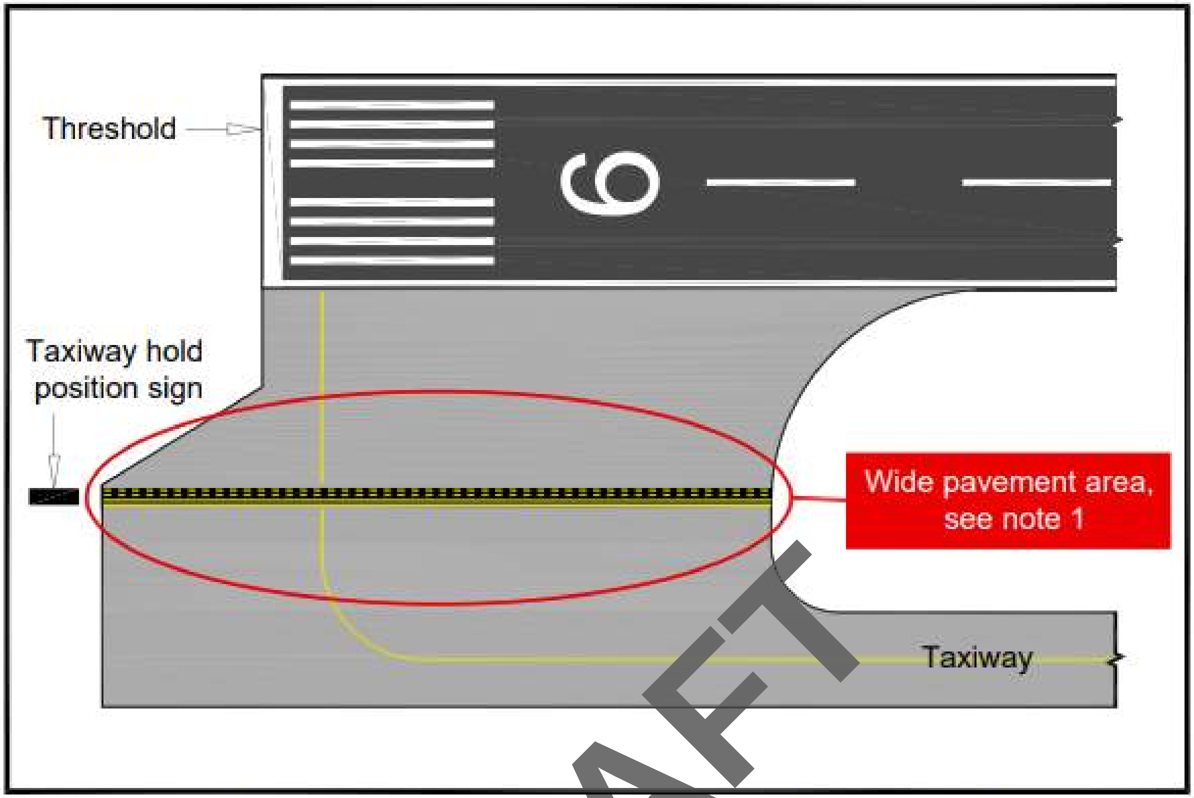
Source: *Google Earth, 2023.*

Note: *Not to scale.*

Updated holding bay standards and recommended practices are provided in AC 150/5300-13B. Holding bays are required to keep aircraft out of the Obstacle Free Zone (OFZ), Precision Obstacle Free Zone (POFZ), RSA, and Instrument Landing System (ILS) critical areas (POFZ and ILS critical areas are not applicable for the runways at PSP). They are also required to be designed to the geometry of the applicable ADG and TDG standards. The holding bay off Runway 13L meets FAA standards. The holding bay off Runway 13R meets the requirements of holding outside of the OFZ and RSA. However, since the holding bay is not marked, it is possible that a pilot might accidentally not be holding outside of the required taxiway OFA. This holding bay also falls under the example that the FAA has identified as a poor holding bay configuration depicted in **Figure 5-24**.

Figure 5-24: Poor Holding Bay – Elevated Risk Configuration



Note 1: The wide distance of the holding bay places the vertical signs outside of the pilot's normal viewing range.

Source: *FAA AC 150/5300-13B.*

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Holding Bay Conclusion

The **Alternatives Analysis** chapter will explore the reconfiguration of the holding bay off Runway 31L end to align with FAA recommended practices and maximize the number of accommodated aircraft. Taxiway reconfiguration on both ends of Runway 13R/31L will be assessed for bypass capability, aiming to enhance operational efficiency and minimize delays during takeoffs. Additionally, the evaluation will include the placement of remain overnight (RON) positions around the commercial service terminal area to hold aircraft after landing in the instances that their gates are occupied.

Potential Vertiport Development

The primary operations conducted on Runway 13R/31L are air carrier and air taxi operations; the primary operations conducted on Runway 13L/31R are small general aviation operations. Although the Airport is not capacity constrained, general aviation operations are supported by local airports within the PSP catchment area such as Blythe Airport (BLH), Jacqueline Cochran Regional Airport (TRM), San Bernardino International Airport (SBD), and Ontario International Airport (ONT), which could provide opportunities for growth at the Airport.

Advanced Air Mobility (AAM) and airport electrification could potentially present several opportunities for PSP that include:

- Developing a new and safe air transportation that moves people and goods between areas that have historically been underserved.
- Replacing conventional aircraft with electric vertical takeoff landing (eVTOL) to:
    - Reduce noise impacts to the surrounding community and,
    - Reduce fuel emissions.
- Receiving new regional AAM air service opportunities through regional air mobility (RAM).

Figure 5-25 shows the potential for PSP to conduct RAM operations to in demand regions such as the Greater Los Angeles area.

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Figure 5-25 Potential Electric Aircraft Opportunities from PSP

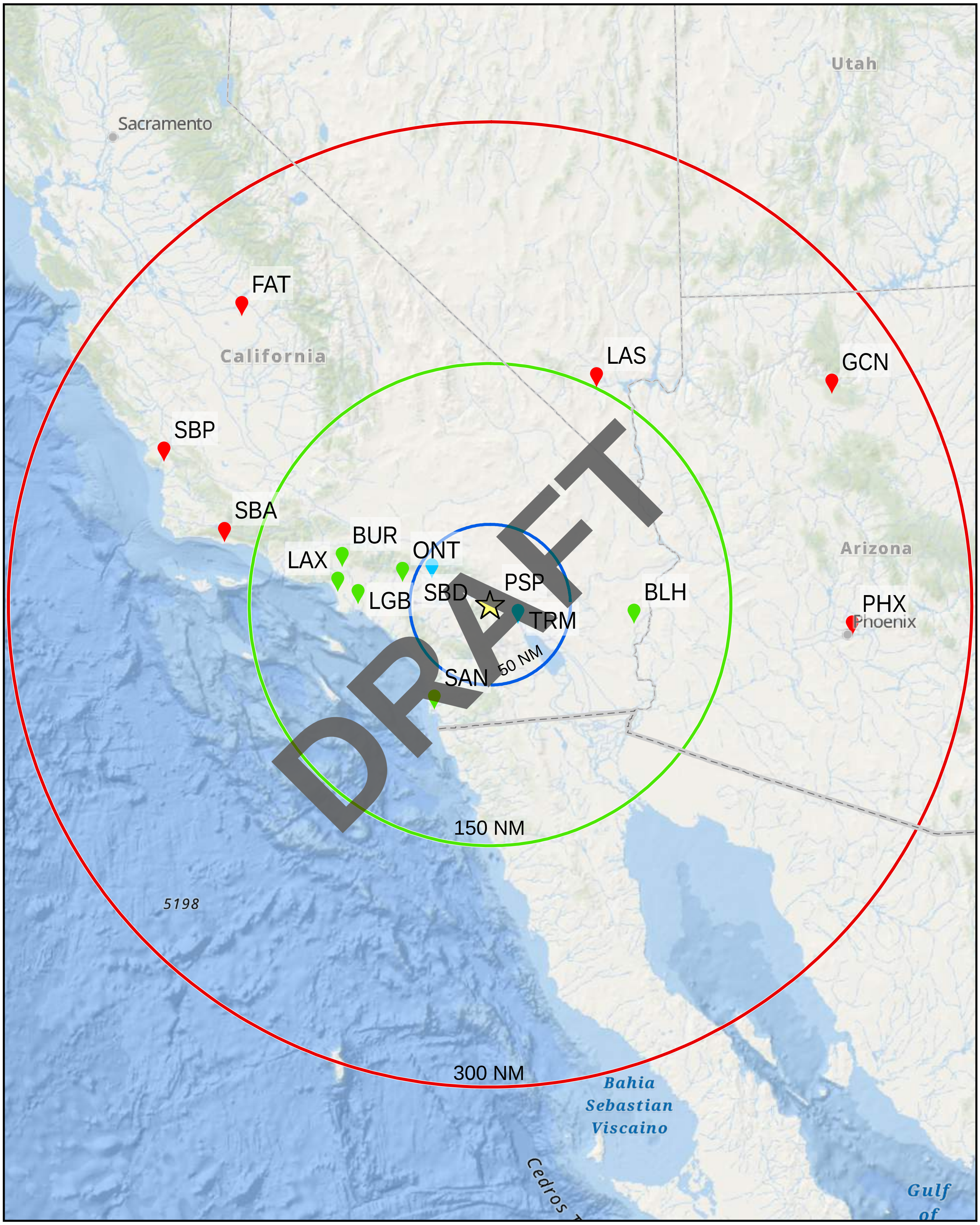
Utah
Sacramento
FAT
California
LAS
GCN
SBP
SBA
BUR
ONT
LAX
SBD
PSP
LGB
TRM
BLH
Arizona
PHX
Phoenix
SAN
50 NM
150 NM
5198
300 NM
Bahia Sebastian Viscaino
Cedros
Gulf of

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Table 5-19 shows the ranges and potential markets electric aircraft will be able to reach according to different data provided by original equipment manufacturers (OEMs). Various emerging electric aircraft are being designed to ranges between 50 and 250 nms. eVTOL aircraft are capable of taking off vertically. An example of an eVTOLs includes BETA Technology's ALIA-250c, which will be able to reach destination airports within 250 nms. Destination airports within a 150-nms radius will be reached using eVTOLs similar to the Pipistrel 801. eVTOLs such as Archer's Maker 101 have the capability to provide air service within the 50-nms range.

Table 5-19: Advanced Air Mobility Examples

eVTOL	Characteristics		
	Range (nms)	ARI[1]	Wingspan
BETA (Alia-250c)	250	8.0	50'
Pipistrel (801)	162	7.2	45'
Archer (Maker 101)	52	7.4	40'

Sources: *Mead & Hunt, 2023; FutureFlight, BETA Technologies, Archer, and AAM Reality Index.*

Note: *[1] ARI – AAM Reality Index*

Table 5-19 is derived from the AAM Reality Index (ARI), which is a rating tool that is derived from a formula that accounts for public information and expert knowledge. The formula considers funding a company receives, the company's leadership team, the readiness of the company technology, the certification process, and readiness for full-scale manufacturing. The greater the ARI value on a zero to ten scale, the greater probability that the company will be able to commercially mass produce their aircraft. A company who receives an ARI value of zero has little to no financing and is considering entering the market.

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Potential Vertiport Development Conclusion

AAM could potentially provide new opportunities that could benefit both PSP and its surrounding communities; therefore, it is necessary to plan for areas that these aircraft are able to operate at the Airport in a safely manner. For the purpose of this Master Plan, it is assumed that eVTOL aircraft will operate at PSP the same way that helicopters currently operate, by taking off and landing on Runway 13L/31R and hover taxiing to their designated parking positions. The **Alternatives Analysis** chapter will identify locations where these aircraft can park. The aircraft will likely need FBO services and will therefore be sited by one or both FBOs.

The FAA released Engineering Brief (EB) Number 105, *Vertiport Design* as interim guidance for the design of vertiports for aircraft with VTOL capabilities and will serve as the design guidelines for all related vertiport development as part of this Master Plan.

LANDSIDE AND SUPPORT

Landside and support requirements are driven by either aviation forecasts, goals set by the Airport and its tenants, by FAA standards, or a combination of all three. This section discusses the requirements and their drivers for landside and support facilities at PSP.

FBO, Corporate, and General Aviation Facilities

PSP has two FBOs: Signature Aviation and Atlantic Aviation. Signature Aviation is currently located on the west side of the airfield while Atlantic Aviation is located on the east. Both FBOs have expansion plans that will be incorporated, to the extent possible, into the preferred alternative.

Signature Aviation

Signature Aviation is currently located on the west side of the airfield, just north of the commercial service terminal. It is understood that Signature may be required to relocate depending on the preferred terminal alternative. It is also understood that there is a great desire from the Airport to develop a portion of Signature's lease, where the general aviation (GA) terminal and aircraft parking apron are located, due to its proximity to the commercial service terminal regardless of the selected preferred alternative. The master plan team met with representatives of Signature Aviation to discuss their goals and desires from this master plan. Signature Aviation's goals are summarized below.

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Signature Aviation Goals

- **Fuel farm expansion.** Projected aircraft activity requires additional fuel tanks.
- **Additional Hangar.** 30,000 square foot hangar.
- **Maintain operation efficiency.** If Signature Aviation is relocated, it is necessary for their operation that all their facilities are co-located.
- **Capacity.** Signature Aviation would like a location that allows them to expand and does not box them in.
- **Cost.** Signature Aviation is concerned about cost of relocating its facilities and apron.

The **Alternatives Analysis** chapter will consider these goals when developing and evaluating the relocation concepts.

Atlantic Aviation

Atlantic Aviation is located on the east side of the airfield. The Master Plan team met with representatives of Atlantic Aviation to discuss their goals and desires from this Master Plan. Atlantic Aviation's goals are summarized below.

Atlantic Aviation Goals

- **Construct or Expand Terminal.** New 8,000 square foot terminal or expansion of existing terminal.
- **General Aviation Customs facility.** A new facility that processes international GA passengers.
- **AAM.** Atlantic Aviation is interested in AAM and would like to accommodate future vertical takeoff and landing aircraft parking.
- **Expand aircraft parking apron.** Atlantic Aviation lost some of its aircraft parking positions due to a portion of the apron falling inside Runway 31R's RPZ. They would like to maximize the available space for aircraft parking.
- **Maximize current lease hold.** Atlantic Aviation has undeveloped land in their existing leasehold, and they would like to find the highest and best use for that available land.

Aircraft Storage Hangars and Transient Aircraft Parking Apron

Hangars and transient aircraft parking apron demand are driven by the GA forecasts that can be found in the **Aviation Activity Forecast** chapter. Hangar demand is typically associated with projected based aircraft, while transient aircraft parking apron is typically associated with annual GA itinerant operations and in particular, peak hour GA itinerant operations.

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The FAA approved forecast, Scenario 2, projects an increase of 31 based aircraft at PSP through the planning period. Of these 31 additional aircraft, 7 are jets, 5 are helicopters, and 23 are designated as other (i.e., eVTOL). The forecast shows a decrease of single engine and multi-engine aircraft. There is a need to plan for additional large hangars to accommodate the increase in jets, helicopters, and other aircraft. No additional single-engine and multi-engine aircraft hangars are needed based on the forecast.

The forecast also shows an increase of annual GA itinerant operations through the planning horizon, which was used to calculate both the number of tiedowns required and the total transient aircraft parking apron demand. Both FBOs have indicated a trend toward larger higher performance GA aircraft and increases in peak hour activity. Both of these trends require an increase in transient aircraft parking apron at PSP. Since the FBOs accommodate more jets than piston/turbo props, the calculation is based on planning for larger aircraft. It was assumed that most of the transient aircraft would park on the apron rather than inside a hangar, which is common especially in warm climates. A total of 20 tiedowns and approximately 5 acres of transient aircraft parking apron are required through the planning horizon for transient aircraft. PSP currently has 24 tiedowns; therefore, based on the forecast, additional tiedowns are not required. PSP has approximately 4.1 acres of transient aircraft parking apron. Additional parking apron for higher performance GA aircraft will need to be planned for in the **Alternatives Analysis** chapter.

Aircraft Storage Hangars and Transient Aircraft Parking Apron Conclusion

The **Alternatives Analysis** chapter will need to consider options for providing additional large hangars and transient aircraft parking apron to meet the forecasted demand. The Airport meets the requirements of both smaller aircraft storage hangars and tiedowns that are projected throughout the planning horizon.

Fuel Farm

PSP has two fuel farms that are operated by the FBOs. Each FBO has its own fuel farm. Discussions with both FBOs led to the following conclusions:

- **Signature Aviation Fuel Farm.** Signature Aviation provides fuel for both GA and air carrier aircraft. They currently have five 20,000-gallon above ground storage tanks (100,000 gallons total), one 10,000-gallon tank of 100 low-lead (LL) aviation gas (Avgas), one 1,000-gallon tank of unleaded gas, and one 1,000-gallon tank of diesel. Due to the air carrier growth that is forecasted at PSP over the next 20 years, Signature Aviation requires an expansion to their fuel farm. The preferred alternative will provide Signature Aviation's required expansion.
- **Atlantic Aviation Fuel Farm.** Atlantic Aviation provides fuel for GA aircraft. They currently have three 20,000-gallon above ground storage tanks (60,000 gallons total), one 1,200-gallon above ground storage tanks, one 60,000-gallon tank of Jet A, and one 1,200-gallon tank of Avgas. The Atlantic Aviation Fuel Farm is anticipated to be adequate throughout the planning period and will not be evaluated further.

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Cargo Facilities

As discussed in the **Aviation Activity Forecast** chapter, the Airport is not served by any all-cargo carriers, which means that all recorded cargo at the Airport is belly cargo on scheduled passenger carriers. The forecast anticipates a growth in cargo activity on scheduled passenger carriers. Cargo requirements will not be evaluated any further as part of this Master Plan, unless there is a desire to evaluate the possibility of an all-cargo facility at PSP in the **Alternatives Analysis** chapter.

Support Facilities

Support facilities at PSP include maintenance and storage facilities, aircraft maintenance, and the Palm Springs Air Museum. Several of the rental car companies have their own designated facilities and all of those facilities are located on western portion of the airfield, adjacent to Signature Aviation's current location. The Airport has their own designated maintenance and storage facility in this area as well. SkyWest Airlines has an aircraft maintenance facility on the opposite end of the airfield, adjacent to Atlantic Aviation's current location. The PS Air Museum is located north of SkyWest's aircraft maintenance facility. The Master Plan team met with the PS Air Museum, and their goals are to construct two new hangars on the south end of their existing apron.

Electric Aircraft Charging Facilities

As discussed above, the **Alternatives Analysis** chapter, will plan for the ability for eVTOL aircraft to safely operate at PSP. Since these aircraft are electrically charged, they require charging facilities. EB 105, currently states the following:

> *At the time of this publication, consensus has not been achieved regarding classes of charging or connection standards and could vary based on the aircraft duty cycle, charging speed, battery chemistry, charging system, and battery cooling system, etc. Charging infrastructure design for vertiports should consider adapting to multiple aircraft specific systems. Additional guidance is currently being developed as the AAM industry continues to evolve.*
>
> *Battery charging must be done in a safe and secure manner. Any aircraft batteries stored on site should be stored safely away from TLOF, FATO, and Safety Areas. As additional research is developed, further recommendations will be released.*

The **Alternatives Analysis** chapter will site charging facilities away from touchdown and liftoff (TLOF) and final approach and takeoff area (FATO). Electric aircraft charging facilities will also remain outside of all critical and safety areas discussed in AC 150/5300-13B.

Emergency Services

PSP has a dual-purpose aircraft rescue and firefighting (ARFF) and city fire station facility on airport property, which is located behind the ATCT. AC 150/5300-13B states that ARFF vehicles need to have clear access to potential accident areas on the airfield. The AC also requires the ARFF to meet the standards presented in CFR 139.315-139.319, *Aircraft Rescue and Firefighting*. Those standards are dependent on an airport's ARFF index, which is determined by the longest aircraft that regularly uses the airport. The standards dictate the number of equipment, type of firefighting agents, and response times required. ARFF index requirements are presented in **Table 5-20**.

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Table 5-20: ARFF Index

ARFF Index	Aircraft Length
A	Less than 90 feet
B	At least 90 feet but less than 126 feet
C	At least 126 feet but less than 159 feet
D	At least 159 feet but less than 200 feet
E	At least 200 feet

Source: *CFR 139.315.*

PSP's existing ARFF index is C. Based on the information presented in the **Aviation Activity** chapter, **Table 5-21** presents the ARFF index for each aircraft that is forecasted to regularly use the Airport throughout the planning period. The ARFF index for PSP remains as C based on the aircraft that are forecasted to regularly use the Airport.

Table 5-21: PSP ARFF Index Based on Regularly Used Aircraft

Aircraft	Aircraft Length	ARFF Index
Airbus A220-100	115’	B
Airbus A321-200neo	146’	C
Airbus A321neo	146’	C
Boeing 737-700	110’	B
Boeing 737-8	130’	C
Boeing 737 MAX 7	117’	B
Boeing 737 MAX 8	130’	C
Boeing 737 MAX 9	138’	C
Embraer 175	104’	B

Sources: *CFR 139.315; FAA Aircraft Characteristics Database.*

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The ARFF building is an old building that has reached the end of its useful life. The Airport is planning to replace the existing building with a new one. Up to three sites will be considered in the **Alternatives Analysis** chapter including rebuilding the facility in its current location.

Part 139 directs that within three minutes from the time of an alarm, at least one ARFF vehicle must reach the midpoint of the farthest runway serving air carrier aircraft from its assigned post or reach any other specified point of comparable distance on the movement area that is available to air carriers and begin application of extinguishing agent. As a result, the location of an ARFF building must be sited so that these response time requirements can be met.

In determining potential sites for a new ARFF facility at PSP, an evaluation was conducted to determine where a new building could be placed so that response to the midpoint and approach ends of Runway 13R/31L could occur within three minutes. For this evaluation, guidance from National Fire Protection Agency (NFPA) 403, Standard for Aircraft Rescue and Fire-Fighting Services at Airports was referenced in determining the rates of acceleration, deceleration, and cruise of ARFF vehicles. In summary, the following assumptions were used:

- Time taken from alarm to vehicles exiting ARFF station: 45 seconds
- Time/distance taken to accelerate from 0 to 25 miles per hour (mph): 17.5 seconds/330 feet
- Time/distance taken to accelerate from 25 to 50 mph: 17.5 seconds/970 feet
- Time/distance taken to decelerate from 50 to 25 mph: 8.7 seconds/490 feet
- Time/distance taken to decelerate from 25 to 0 mph: 8.7 seconds/160 feet
- Speed in a turn: 25 mph/36.7 feet per second
- Speed in a straight line: 50 mph/73.3 feet per second

As a basis for comparison, an evaluation was completed of the response time from the existing ARFF building located on the west side of the airfield. From this location, the time estimated to respond to the midpoint of Runway 13R/31L from notice of alarm was estimated at two minutes, 45 seconds. To respond to the approach end of Runway 13R, the response time was estimated at two minutes, 29 seconds, and the response to the approach end of Runway 31L was estimated at two minutes, 34 seconds.

With this information, evaluations were conducted to determine the range of potential sites on the west side of the airfield so that response to the midpoint and approach ends of Runway 13R/31L could continue to occur within three minutes. As shown in **Figure 5-26**, this evaluation found that placement of an ARFF building on the west side of the airfield south of the intersection of Taxiway W with Taxiway J and north of the air carrier terminal building would continue to allow ARFF vehicles to respond to all points of Runway 13R/31L within three minutes. Sites on the east side of the airfield adjacent to Taxiway E were not considered since ARFF vehicles would need to cross Runway 13L/31R. This has the potential to increase response times since a delay would occur if responding ARFF vehicles needed to wait until the runway is cleared of landing and departing aircraft.

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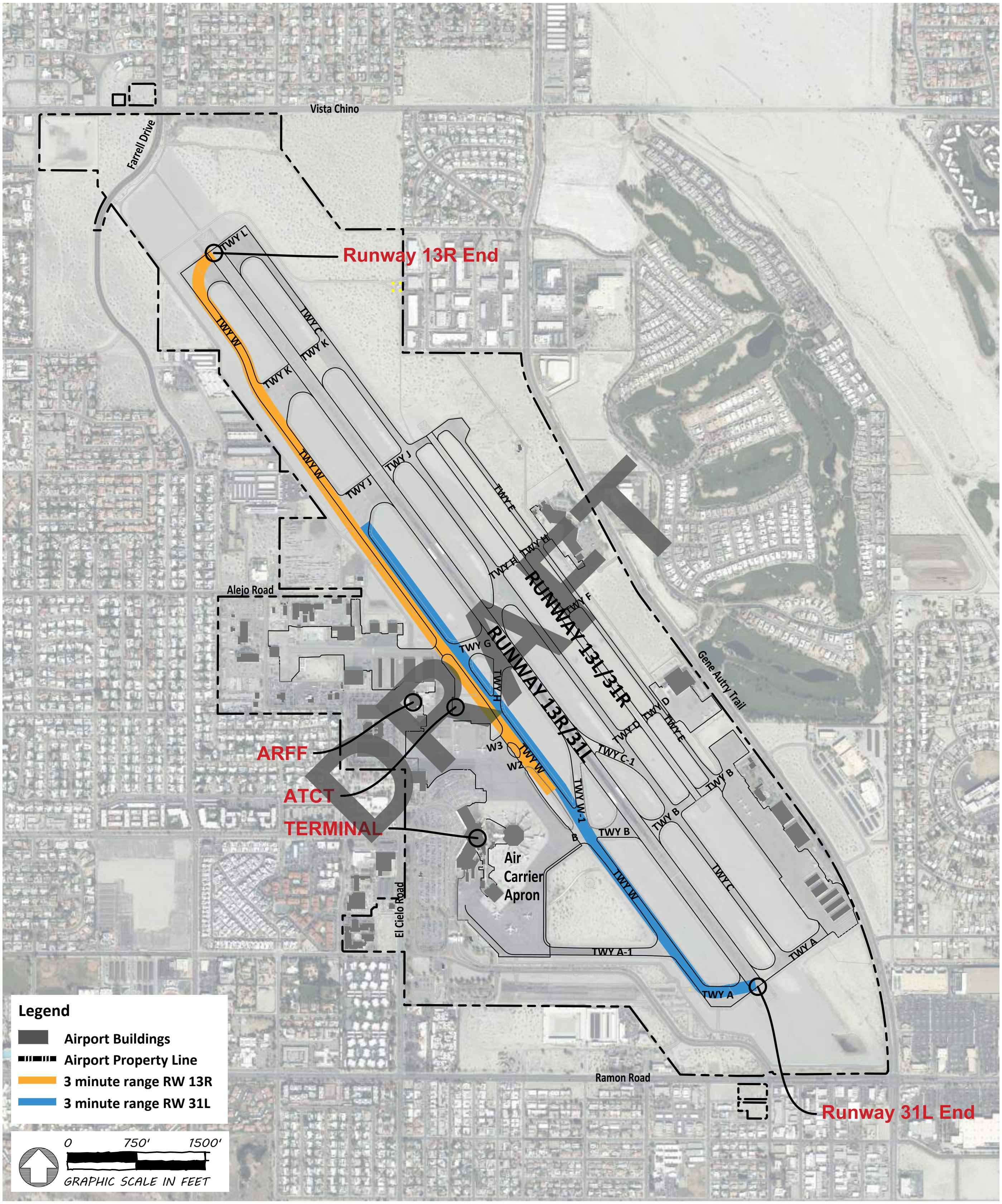
Figure 5-26: ARFF Response Route -3 Minute Range


Vista Chino
Farrell Drive
TWY L
Runway 13R End
TWY C
TWY K
TWY K
TWY W
TWY W
TWY J
TWY J
TWY E
TWY H
TWY H
RUNWAY 13L/31R
TWY F
RUNWAY 13R/31L
TWY G
TWY H
Alejo Road
ARFF
ATCT
TERMINAL
W3
W2
TWY W
TWY W-1
TWY C-1
TWY D
TWY D
TWY E
TWY B
TWY B
TWY B
B
Gene Autry Trail
Air Carrier Apron
El Cielo Road
TWY W
TWY C
TWY A-1
TWY A
TWY A
Ramon Road
Runway 31L End
DRAFT
Legend
Airport Buildings
Airport Property Line
3 minute range RW 13R
3 minute range RW 31L
0
750'
1500'
GRAPHIC SCALE IN FEET

SUMMARY

This section summarizes the facility requirements evaluated in this chapter. Expansion and development of these facilities will be explored further in the **Airfield and Landside Alternatives Analysis** chapter.

- Runway 13R/31L – resolve non-standard ROFA.
- Runway 13L/31R – provide up to a 1,000-foot runway extension.
- Taxiways and Holding Bays – reconfigure to meet current FAA design standards and incorporate RSAT Hot Spot Study.
- Vertiport – provide potential locations for AAM activity.
- Signature Aviation – relocate Signature Aviation, expand fuel farm, and provide a 30,000-square-foot hangar.
- Atlantic Aviation – maximize existing leasehold, maximize aircraft parking, and provide a customs facility.
- Aircraft Storage Hangars and Transient Aircraft Parking Apron – provide aircraft storage hangars for based aircraft and additional transient aircraft parking apron.
- SkyWest – park aircraft on apron outside of ADG II TOFA, mark if needed.
- PS Air Museum – provide space for the construction of up to two hangars on south end of existing apron.
- ARFF – provide potential sites that meet ARFF response times to rebuild the facility as a dual-purpose airport and city fire station.

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Chapter 6 – Airfield and Landside Alternative Analysis

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INTRODUCTION

The conceptual planning process is designed to evaluate the information gathered to date during the inventory, forecast, and facility requirements stages and use this information to develop alternatives that meet the anticipated demand on Palm Springs International Airport (PSP or the Airport). The airfield and landside alternatives presented in this chapter are the direct result of the collaborative effort of the Consultant Team, Airport Staff, tenants, and the Palm Springs Airport Commission.

The following section outlines the planning assumptions associated with the alternative concepts and the goals that the airfield and landside alternatives are designed to achieve. The Assumptions and Goals section is followed by a summary and a description of the advantages and disadvantages for each alternative concept.

ASSUMPTIONS AND GOALS

A series of both fundamental reasoning assumptions and development goals drive the planning process and influence the basis for the recommended long-term development program for the Airport. The following assumptions and goals were established to help guide the development and analysis of a range of alternatives designed to accommodate current and future demand at the Airport.

Assumption One: ***The role of the Airport will remain the same.***
The Airport will continue to serve as a facility that accommodates commercial passenger service activity for the region and internationally as well as general aviation (GA) activity.

Assumption Two: ***The Airport will continue to provide a safe and reliable operating environment.***
Alternatives will meet current local, state, and federal recommendations and design standards to maintain a safe and reliable operating environment.

Assumption Three: ***Efficient planning is necessary due to the limited available space.***
The Airport is surrounded and constrained by developed infrastructure off airport property. Space on airport property is limited. Therefore, consideration of the highest and best use of on-airport land use is crucial.

Assumption Four: ***Utilize existing infrastructure and facilities.***
To the extent possible, alternatives will attempt to utilize existing infrastructure and facilities to keep projects costs low. When it is not possible, the alternative will be carefully evaluated to make sure there is no other solution.

Assumption Five: ***The airfield must accommodate the critical aircraft.***
The critical aircraft for each runway determines the airfield's design criteria. Different portions of the airfield will be planned based on the critical aircraft for each runway. The primary runway will drive most of the design standards for the west side of the airfield, while the additional runway will drive the design standards for the east side of the airfield. The future critical aircraft for Runway 13R/31L is the Boeing 737 MAX 9; the future critical aircraft for Runway 13L/31R are the Beechcraft King Air and Cessna Citation CJ2. The resulting runway design codes (RDCs) for the runways are D-III-5000 and B-II (small)-VIS, respectively.

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Goals for Development

Accompanying these assumptions are several goals, which have been determined to direct the planning and establish continuity for future airport development. These goals consider several categorical considerations related to the Airport's short-term and long-term needs, including safety, noise, capital improvements, financial and economic conditions, public interest and investment, and community recognition and awareness.

Airport Development Goals

- Provide future facilities that are flexible, cost-effective, and financially feasible.
- Recommend development that can be implemented in a phased approach.
- Recommend development that is responsive to the needs of all stakeholders.
- Reflect the character of the Palm Springs region and the existing airport environs.

PRELIMINARY AIRFIELD ALTERNATIVE CONCEPTS

The primary goals of the airfield alternatives are to meet current the Federal Aviation Administration (FAA) design standards and maintain a safe and efficient airfield system. The airfield alternatives outlined in this section aim to address the issues and non-standard conditions discussed in the **Airside and Landside Facility Requirements** chapter. The exploration of various alternatives encompasses runways, taxiways, and holding bays. Additionally, the relocation of navigational aids (NAVAIDs) is considered, as some adjustments may be necessary due to other proposed projects.

Runway 13R/31L Alternatives

As PSP's primary runway, Runway 13R/31L serves commercial service aircraft and larger GA aircraft. As discussed in the **Airside and Landside Facility Requirements** chapter this runway does not meet the dimensional criteria for the runway object free area (ROFA). The required dimensions for Runway 13R/31L's ROFA are summarized in **Table 6-1**.

Table 6-1: Runway 13R/31L ROFA Dimension Standards

Item	Existing Dimension	FAA Criteria	Standard Met
ROFA			
Length beyond departure end[1] (Runway 13R)	**503'**	1,000'	**No**[2]
Length beyond departure end (Runway 31L)	1,000'	1,000'	Yes
Length prior to threshold (Runway 13R)	600'	600'	Yes
Length prior to threshold (Runway 31L)	600'	600'	Yes
Width	800'	800'	Yes

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Sources: *Mead & Hunt, 2023; FAA Advisory Circular 150/5300-13B.*

Notes: *[1] Due to the application of declared distance standards, the length beyond the departure end for Runway 13R begins at the end of the Accelerate-Stop Distance Available (ASDA) and Landing Distance Available (LDA) rather than the physical end of runway.*

[2] The length beyond runway end for Runway 13R's ROFA does not meet standards because of the existing perimeter road.

The required ROFA length beyond departure end for this runway is required to be 1,000 feet. However, only 503 feet is available because the existing perimeter road south of Runway end 31L limits the length beyond the departure end for takeoffs to the south (aircraft departing off Runway 13R).

Three alternatives were explored to resolve the non-standard ROFA: apply for a modification of standard (MOS), relocate the perimeter road, and adjust the declared distances. All three alternatives do not affect the departure runway protection zones (RPZ). This was intentional to not introduce incompatible land uses after determining, in the previous chapter, the existing land use has either no impact or low impact to the surrounding community.

Runway 13R/31L Alternative 1

Alternative 1 is for the Airport to apply for a MOS for the non-standard ROFA. A MOS requires the Airport to complete all applicable paperwork, which is then submitted to the FAA. The FAA evaluates the non-standard condition and determines whether the MOS will provide an equivalent level of safety.

Potential Advantages of Alternative 1

- The alternative does not require construction or relocation of runway or taxiway pavement or road relocations.
- No traffic studies would be required.
- The alternative does not relocate any thresholds or change approach or departure profiles or paths for Runway 13R/31L.

Potential Disadvantages of Alternative 1

- The MOS may not be approved.
- Additional analysis may be required to demonstrate how an equivalent level of safety will be achieved.
- The Airport will need to reapply for the MOS every five years.

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Runway 13R/31L Alternative 2

Alternative 2, depicted on **Figure 6-1**, resolves the non-standard ROFA by adjusting the declared distances. The published Accelerate Stop Distance Available (ASDA) and Landing Distance Available (LDA) for Runway 13R are currently 9,857 feet and 6,857 feet, respectively. Alternative 2 shifts the end of both the ASDA and LDA 497 feet so that there is a total of 1,000 feet from the end of the new ASDA/LDA and the existing service road. The alternative also adds 497 feet of takeoff only pavement to Runway 13R's end. So, the ASDA remains 9,857 feet but with a standard ROFA. Finally, the alternative also relocates Runway 13R's threshold 497 feet to the north, so the LDA remains 6,857 feet to meet the landing requirements discussed in the **Airside and Landside Facility Requirements** chapter.

Potential Advantages of Alternative 2

- The alternative provides a standard ROFA of 1,000 feet beyond the takeoff end of the published ASDA and LDA.
- The alternative does not require relocation of road.

Potential Disadvantages of Alternative 2

- The alternative requires construction of additional airfield pavement (both runway and taxiway).
- The alternative relocates the Runway 13R threshold so aircraft would be lower on approach from the north.

- While noise impacts would likely be minimal, lower aircraft on approach could be perceived as a noise impact by airport neighbors.
- The alternative may require changes to the FAA-approved and published approach procedure to Runway 13R.

Runway 13R/31L Alternative 3

Alternative 3, depicted on **Figure 6-2**, resolves the non-standard ROFA by relocating a portion of the perimeter service road and fence. This relocation requires a portion of Kirk Douglas Way, between Airport Center Drive and Ramon Road, to be realigned. The new alignment of Kirk Douglas Way would intersect Ramon Road at a new signaled four-way intersection at Cll Santa Cruz. Due to the proximity of Runway 13R/31L to Ramon Road, the relocation of the perimeter service road and fence does not provide the full standard 1,000 feet, it only provides 977 feet. To get the standard 1,000 feet, this alternative shortens the ASDA and LDA for operations in south flow (arrivals and takeoffs off Runway 13R) by 23 feet. The resulting ASDA is a total of 9,834 feet; the resulting LDA is a total of 6,834 feet. It is important to note that, even with the reductions, these lengths still meet the runway length requirements for takeoffs and landings that were evaluated in the **Airside and Landside Facilities Requirements** chapter.

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Potential Advantages of Alternative 3

- The alternative provides a standard ROFA of 1,000 feet beyond the takeoff end of the published ASDA and LDA.
- The alternative does not relocate any thresholds or change approach or departure profiles or paths for Runway 13R/31L.

Potential Disadvantages of Alternative 3

- The alternative would require coordination with the City of Palm Springs (City) transportation department to relocate a major signalized intersection.
- The alternative would likely require further traffic studies.

Figure 6-1: Runway 13R/31L - Alternative 2

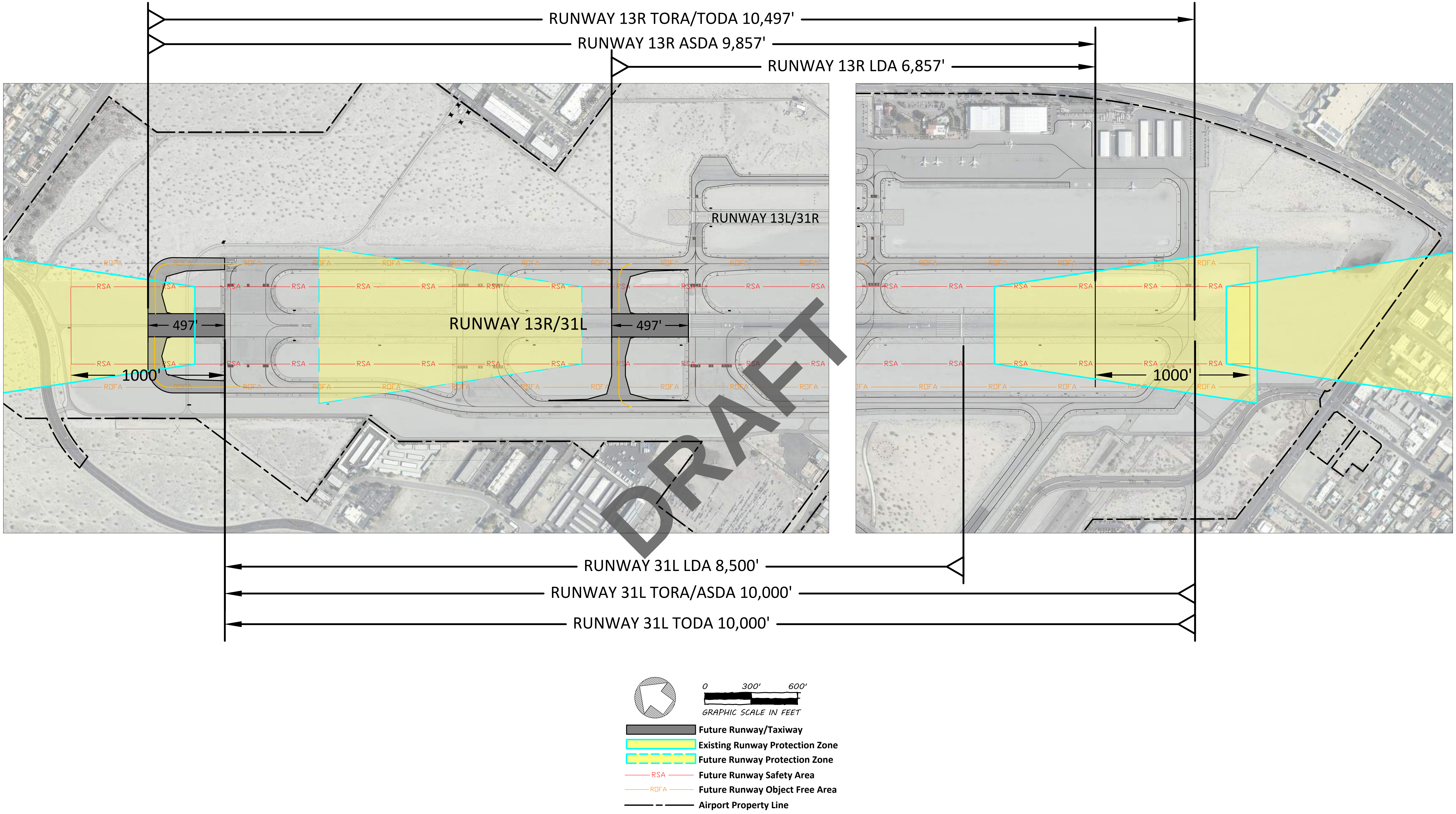
RUNWAY 13R TORA/TODA 10,497'
RUNWAY 13R ASDA 9,857'
RUNWAY 13R LDA 6,857'
RUNWAY 13L/31R
RUNWAY 13R/31L
497'
497'
1000'
1000'
RSA
ROFA
RUNWAY 31L LDA 8,500'
RUNWAY 31L TORA/ASDA 10,000'
RUNWAY 31L TODA 10,000'
0
300'
600'
GRAPHIC SCALE IN FEET
Future Runway/Taxiway
Existing Runway Protection Zone
Future Runway Protection Zone
Future Runway Safety Area
Future Runway Object Free Area
Airport Property Line

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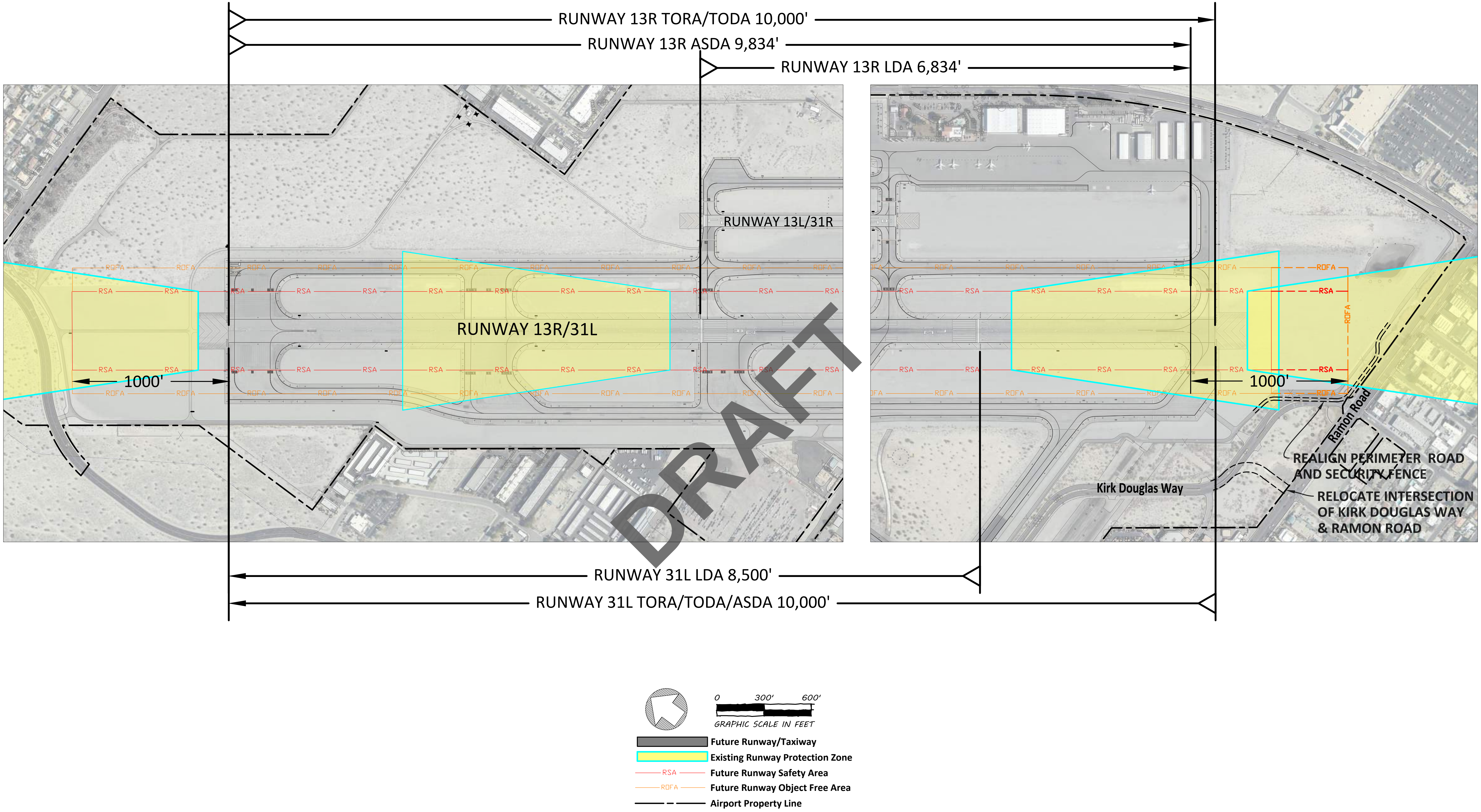
Figure 6-2: Runway 13R/31L - Alternative 3


RUNWAY 13R TORA/TODA 10,000'
RUNWAY 13R ASDA 9,834'
RUNWAY 13R LDA 6,834'
RUNWAY 13L/31R
RUNWAY 13R/31L
RSA
ROFA
1000'
1000'
Ramon Road
REALIGN PERIMETER ROAD AND SECURITY FENCE
RELOCATE INTERSECTION OF KIRK DOUGLAS WAY & RAMON ROAD
Kirk Douglas Way
RUNWAY 31L LDA 8,500'
RUNWAY 31L TORA/TODA/ASDA 10,000'
0
300'
600'
GRAPHIC SCALE IN FEET
Future Runway/Taxiway
Existing Runway Protection Zone
Future Runway Safety Area
Future Runway Object Free Area
Airport Property Line

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Runway 13R/31L Alternatives Summary

Each alternative is summarized below. **Table 6-2** provides a comparison of the alternatives presented above.

- **Alternative 1** – apply for MOS.
- **Alternative 2** – adjust published declared distances.
- **Alternative 3** – realign Kirk Douglas Way to relocate the existing perimeter service road and fence.

Table 6-2: Runway 13R/31L Alternatives Comparison

Item	Alt 1	Alt 2	Alt 3
Meets ROFA dimensional standard	**No**[1]	Yes	Yes
Shortens published declared distances	No	No	**Yes**[2]
Requires relocation/construction of infrastructure	No	**Yes**[3]	**Yes**[4]
Potentially requires further studies	No	**Yes**[5]	**Yes**[6]

Source: *Mead & Hunt, 2023.*

Notes: *[1] Would be MOS assuming FAA approval.*

[2] ASDA and LDA for operations to south shortened by 23 feet.

[3] Requires construction of additional runway and taxiway pavement.

[4] Requires relocation of existing perimeter road and fence and relocation of Kirk Douglas Way.

[5] Potentially requires a noise study because of shifted RPZ.

[6] Potentially requires a traffic study because of relocation of Kirk Douglas Way.

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Runway 13R/31L Recommendation

The recommended Runway 13R/31L alternative is to apply for a MOS (Alternative 1). If approved, this resolves the non-standard ROFA quickly because it does not require any construction or any further studies. As discussed above, the MOS would need to be resubmitted to FAA every five years. Therefore, as a long-term solution, it is also recommended to realign Kirk Douglas Way, the perimeter fence, and the service road (Alternative 3).

Runway 13L/31R Alternatives

Runway 13L/31R currently serves smaller GA aircraft at PSP. Its length does not allow for larger corporate jets to operate. This forces most large jet activity to operate on Runway 13R/31L. This section discusses three alternatives that extend Runway 13L/31R to allow some small and mid-size jets to operate. All alternatives provide an approximate 1,000-foot extension to a future runway length greater than 5,000 feet.

Runway 13L/31R Alternative 1

Alternative 1, depicted on **Figure 6-3**, adds 1,000 feet of pavement to the south end of the runway. A new taxiway would extend south onto the taxilane to provide access to the extended runway, eliminating this portion of the Fixed Base Operator (FBO) apron.

Potential Advantages of Alternative 1

- The alternative allows additional use by small and mid-size jets.

Potential Disadvantages of Alternative 1

- The alternative's new taxiway and taxiway object free area restrict parking on FBO apron.
- The alternative's potential loss of a dual taxilane impacts circulation on FBO apron.
- The ROFA impacts FBO helicopter parking positions.
- Aircraft arriving Runway 13L/31R from the south and departing Runway 13L/31R to the south would be lower over noise sensitive land uses south of the Airport.

Runway 13L/31R Alternative 2

Alternative 2, depicted on **Figure 6-4**, adds 500 feet of pavement to both ends of Runway 13L/31R. A new taxiway would extend south onto the FBO's taxilane to provide access to the extended runway, eliminating this portion of the FBO's apron. A new taxiway would be constructed on Runway 13L's end.

Potential Advantages of Alternative 2

- The alternative allows additional use by small and mid-size jets.
- Both 31 Runway thresholds align, which could make it easier for pilots to identify runways and avoid mistaking taxiways for runways.
- The alternative impacts less of the FBO apron compared to Alternative 1.

Potential Disadvantages of Alternative 2

- The new taxiway and taxiway object free area restrict parking on the FBO apron.
- The potential loss of a dual taxilane impacts circulation on the FBO apron.
- Aircraft arriving and departing Runway 13L/31R in both directions would be lower over noise sensitive land uses both north and south of the Airport.
- The alternative leads to the need to relocate helicopter parking positions.

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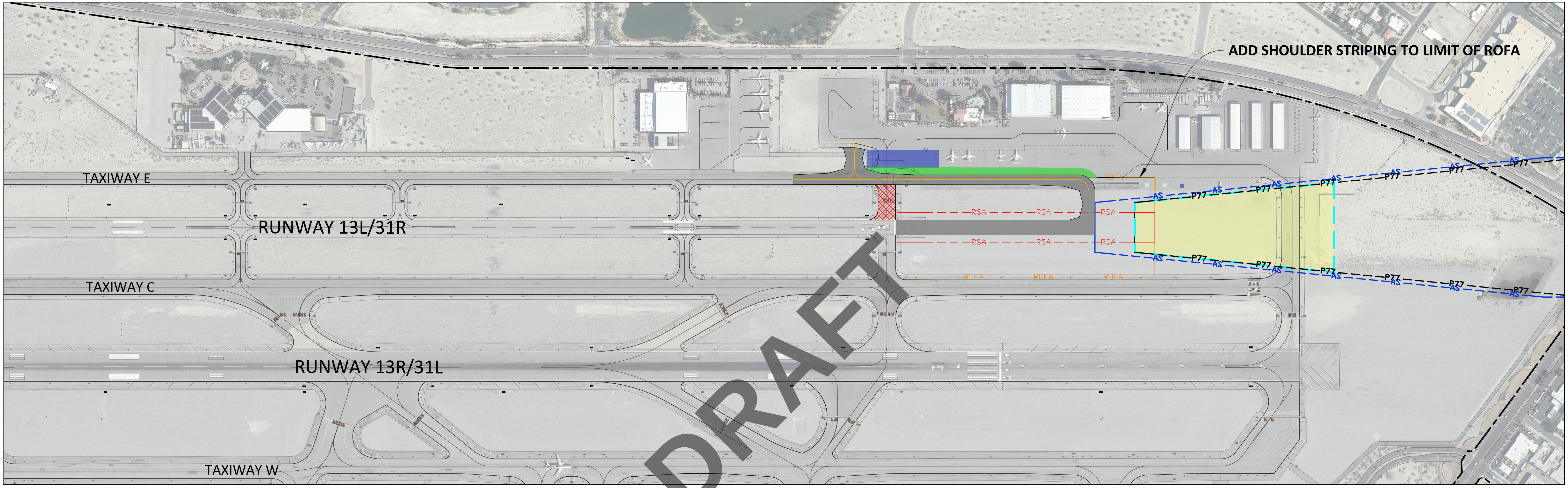
Figure 6-3: Runway 13L/31R - Alternative 1 - Extend 31R 1,000 feet


ADD SHOULDER STRIPING TO LIMIT OF ROFA
TAXIWAY E
RUNWAY 13L/31R
TAXIWAY C
RUNWAY 13R/31L
TAXIWAY W
RSA
ROFA
P77
AS

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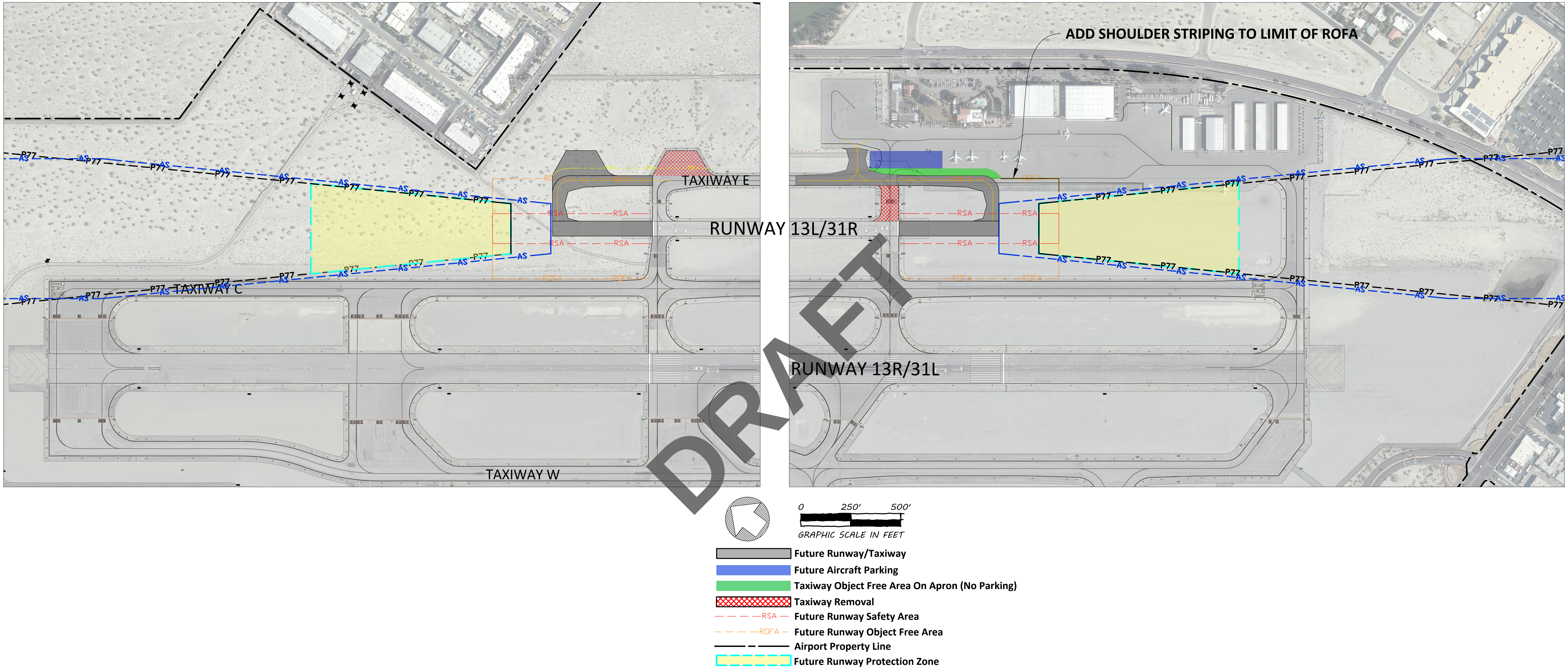
0 250' 500'
GRAPHIC SCALE IN FEET

- ▭ Future Runway/Taxiway
- 🟦 Future Aircraft Parking
- 🟩 Taxiway Object Free Area On Apron (No Parking)
- ▨ Taxiway Removal
- ■ Future Helicopter Parking
- — — —RSA— Future Runway Safety Area
- — — —ROFA— Future Runway Object Free Area
- ——— - ——— Airport Property Line
- ▭ Future Runway Protection Zone

Figure 6-4 Runway 13L/31R - Alternative 2 - Extend Both Runway Ends 500 feet


ADD SHOULDER STRIPING TO LIMIT OF ROFA
TAXIWAY E
RUNWAY 13L/31R
TAXIWAY C
RUNWAY 13R/31L
TAXIWAY W
RSA
ROFA
P77
AS
0
250'
500'
GRAPHIC SCALE IN FEET
Future Runway/Taxiway
Future Aircraft Parking
Taxiway Object Free Area On Apron (No Parking)
Taxiway Removal
Future Runway Safety Area
Future Runway Object Free Area
Airport Property Line
Future Runway Protection Zone

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Runway 13L/31R Alternative 3

Alternative 3, depicted on **Figure 6-5**, adds 825 feet of pavement to the end of Runway 13L. This alternative attempted to minimize the impacts to the FBO's apron.

Potential Advantages of Alternative 3

- The alternative allows additional use by small and mid-size jets.
- The alternative impacts less of the FBO apron compared to Alternatives 1 and 2.
- The alternative does not impact existing helicopter parking positions.
- The alternative maintains the ability for airfield circulation in that aircraft can cross at the Runway 31R threshold.

Potential Disadvantages of Alternative 3

- The alternative leads to the need to relocate helicopter parking positions.
- Aircraft arriving Runway 13L/31R from the north and departing Runway 13L/31R to the north would be lower over noise sensitive land uses north of the Airport.

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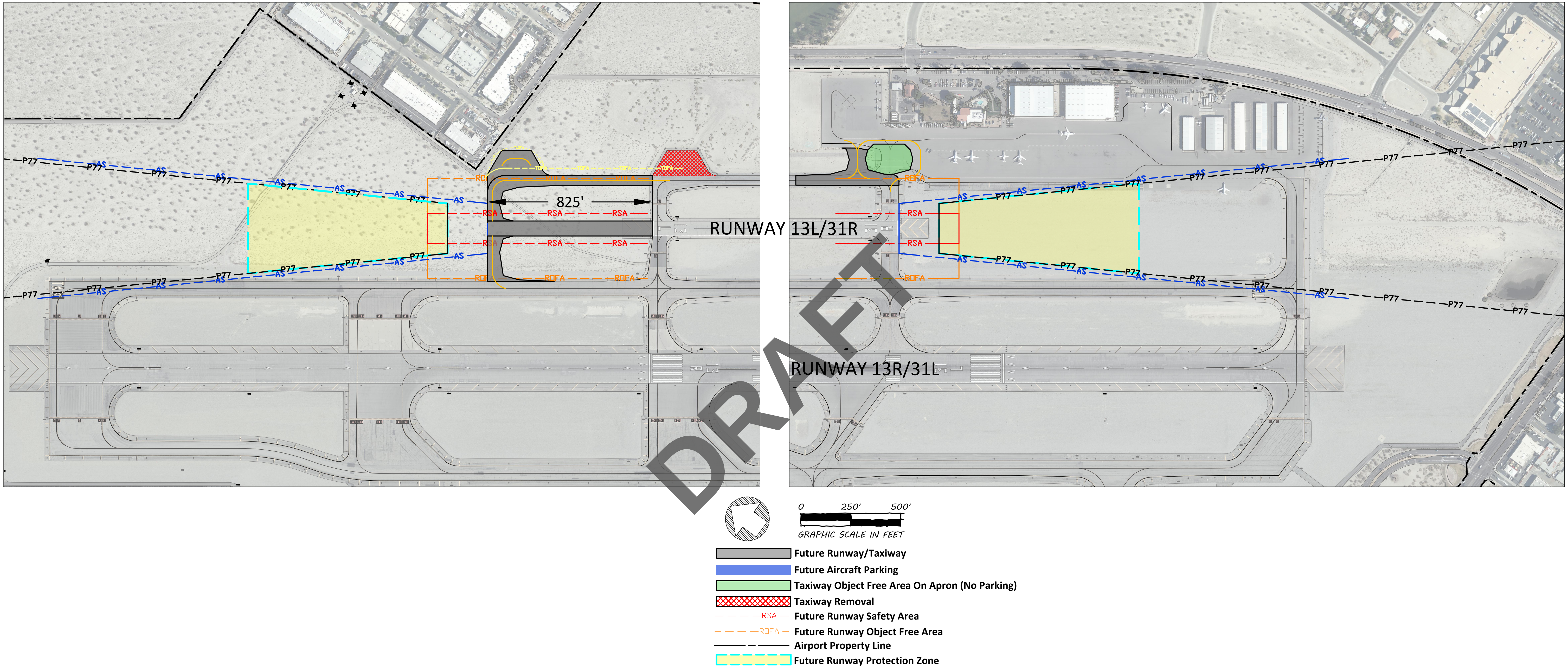
Figure 6-5: Runway 13L/31R - Alternative 3 - Extend Runway 13L End 825 feet


P77
AS
RSA
RDFA
ROFA
TOFA
825'
RUNWAY 13L/31R
RUNWAY 13R/31L
0
250'
500'
GRAPHIC SCALE IN FEET
Future Runway/Taxiway
Future Aircraft Parking
Taxiway Object Free Area On Apron (No Parking)
Taxiway Removal
RSA
Future Runway Safety Area
ROFA
Future Runway Object Free Area
Airport Property Line
Future Runway Protection Zone

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Runway 13R/31L Alternatives Summary

Each alternative is summarized below. **Table 6-3** provides a comparison of the alternatives presented above.

- **Alternative 1** – add 1,000 feet of pavement to Runway 31R's end.
- **Alternative 2** – add 500 feet of pavement to Runway 13L's end; add 500 feet of pavement to Runway 31R's end.
- **Alternative 3** – maximize the additional pavement to 13L's end by adding 825 feet.

Table 6-3: Runway 13L/31R Alternatives Comparison

Item	Alt 1	Alt 2	Alt 3
Allows some small and medium size jets to operate on runway	Yes	Yes	Yes
Impacts FBO apron and aircraft parking	**Yes**[1]	**Yes**[1]	**Yes**[1]
Impacts FBO circulation	**Yes**[2]	**Yes**[2]	No

Source: *Mead & Hunt, 2023.*

Notes: [1] *FBO parking impacted by the RPZ, ROFA, and Taxiway Object free area (TOFA) shifting with the runway/taxiway extension.*

[2] *The greater the extension to Runway 31R's end, the higher the potential for apron and circulation impacts.*

Runway 13L/31R Recommendation

The recommended Runway 13L/31R alternative is to add 825 feet of additional runway pavement to the north end of the runway (Alternative 3). This is the recommended alternative because this does not impact the existing FBO's apron.

Taxiway and Holding Bay Alternatives

As discussed in the **Airside and Landside Facility Requirements** chapter, several taxiways do not meet current FAA design standards and recommendations. The issues that will be addressed in this section are summarized below.

- **Wide Expanses of Pavement.** Taxiways A, G, H, J, K, and L currently have wide expanses of pavement that exceed FAA design standards.
- **Crossings in Middle Third of Runway.** Taxiway H crosses Runway 13R/31L in the middle third of the runway.
- **Pilot Visibility.** Taxiway A is a non-right-angle entrance and Taxiway H is an angled crossing point, making it more difficult for pilots to see both runway ends.
- **Direct Access.** PSP has several locations of direct access including:
    - Taxiway A from east apron to Runway 31L.
    - Taxiway B from both aprons to both runways.
    - Taxiway D from east apron to Runway 31R.
    - Taxiway G from west apron Runway 13R/31L.

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- **Hot Spots.** As discussed in the **Airside and Landside Facility Requirements** chapter, the Runway Safety Action Team (RSAT) recently completed a hot spot study. Four alternatives were developed, and the recommended preferred alternative has been determined to be Alternative 4 depicted in **Figure 6-6**.

Figure 6-7 through **Figure 6-9** depict a preliminary taxiway and holding bay alternative with the following improvements:

- A portion of Taxiway L and Taxiway K is painted with a green island to eliminate the wide expanse of pavement.
- The excessive pavement on Taxiway A and Taxiway K is demolished.
- Taxiway A and Taxiway K centerlines are realigned so the critical aircraft can hold perpendicular to Runway 13R/31L.
- Taxiway G is reconfigured so aircraft taxiing on Taxilane G need to turn on Taxiway W before accessing the runway.
- The western portion of Taxiway H is demolished so aircraft do not cross the middle third of the runway.
- Taxiways D and H are relocated to eliminate the direct access from SkyWest Maintenance and the Palm Springs (PS) Air Museum's aprons to Runway 13L/31R, respectively.
- The holding bay located on Taxiway A is reconfigured to eliminate what the FAA considers as a high-risk holding bay configuration. An additional runway entrance is provided so one aircraft can bypass another for departure.

Since the taxiway system depends on both the runway and landside alternatives, this alternative will be refined/altered further as the runway and landside alternatives are narrowed down to a preferred alternative.

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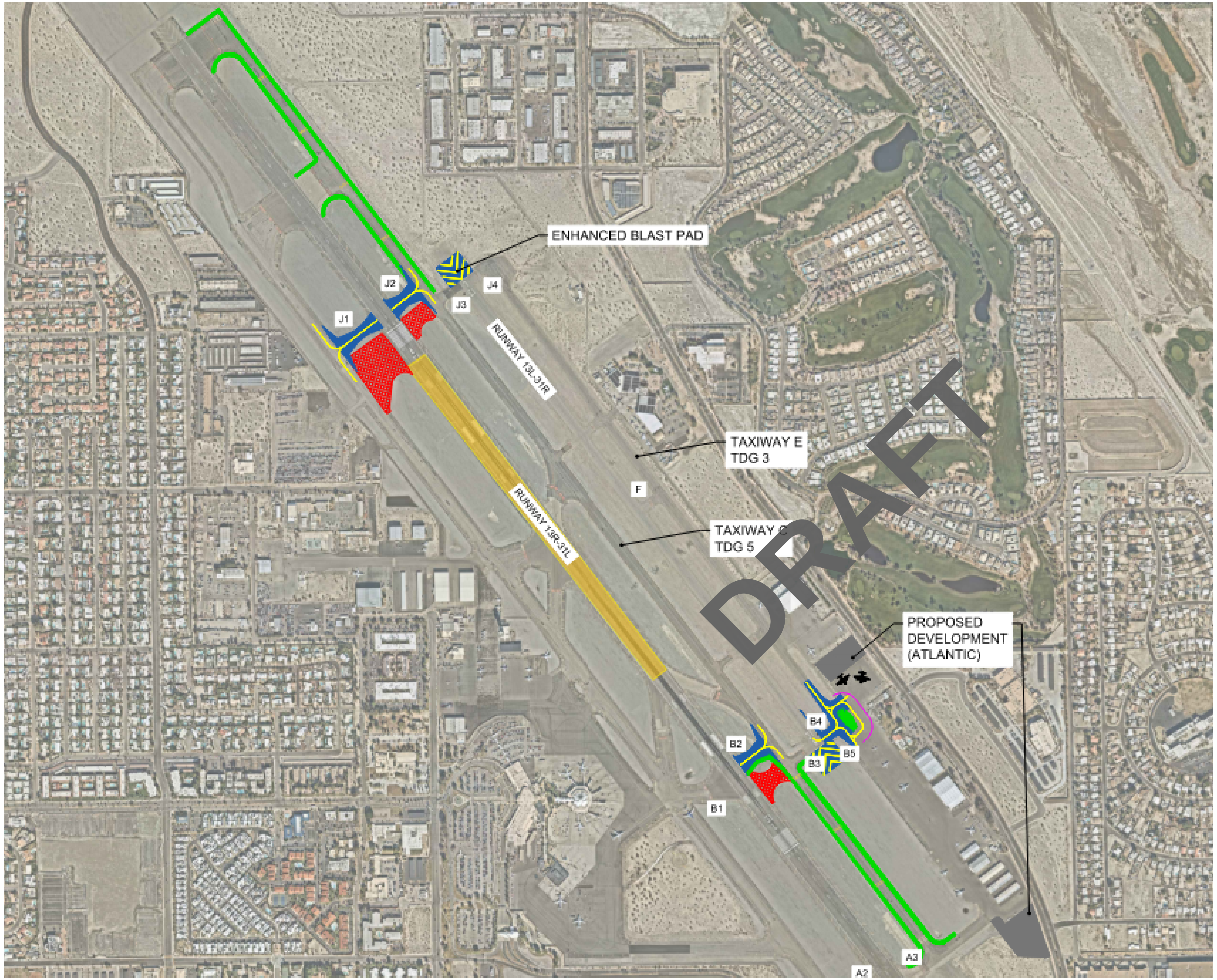
Figure 6-6: Hot Spot Study


ENHANCED BLAST PAD
J2
J4
J1
J3
RUNWAY 13L-31R
TAXIWAY E
TDG 3
F
RUNWAY 13R-31L
TAXIWAY C
TDG 5
PROPOSED
DEVELOPMENT
(ATLANTIC)
B4
B2
B5
B3
B1
A3
A2

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LEGEND

🟦 NEW PAVEMENT

🟥 PAVEMENT TO BE REMOVED

— MARKING

🟨 HIGH-ENERGY AREA

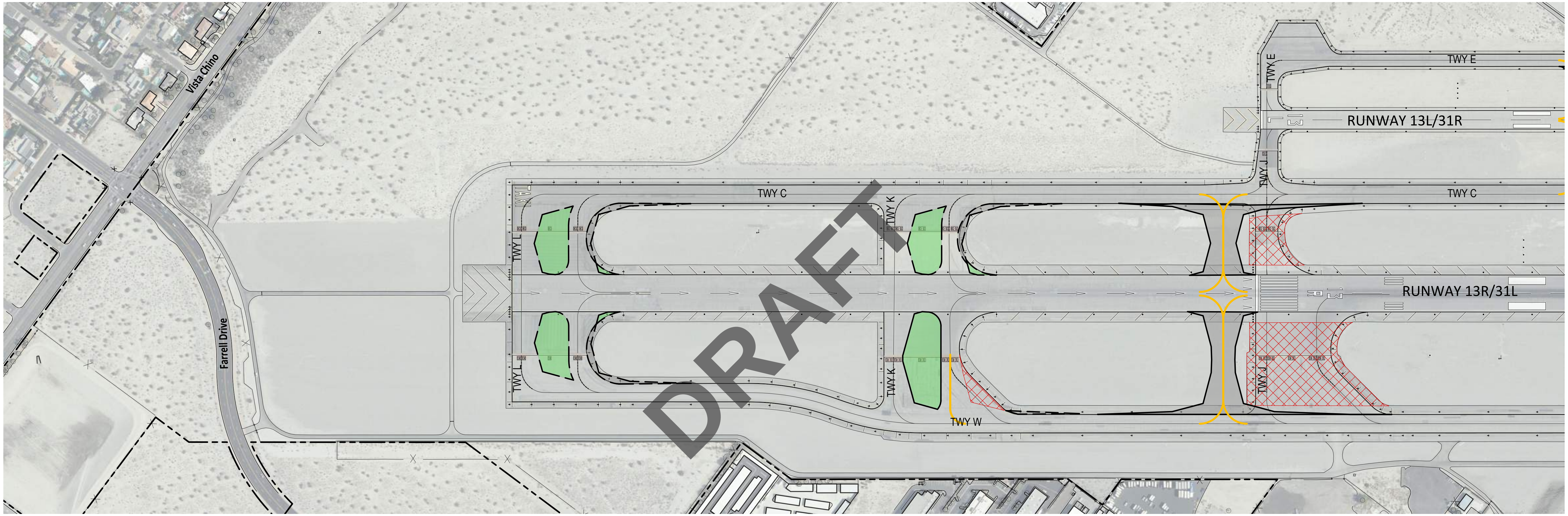
— TAXILANE OBJECT FREE AREA

NOTES:

1. RENAME ALL HOLDING POSITIONS AT HOT SPOTS.
2. GREEN PAINT FOR TAXIWAY C SHOULDERS.
3. EAST APRON HEIGHT RESTRICTIONS.

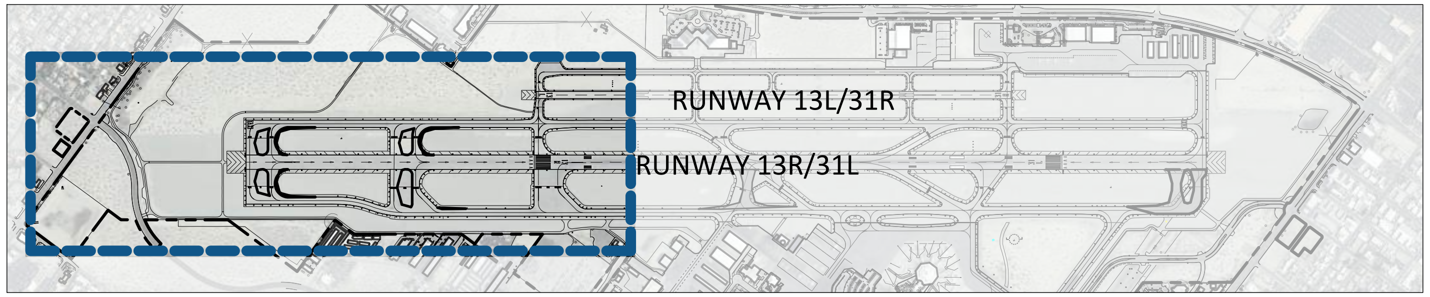
NORTH

Figure 6-7: Taxiway Alternative 1 - North Detail


Vista Chino
Farrell Drive
TWY E
RUNWAY 13L/31R
TWY J
TWY C
TWY C
TWY L
TWY L
TWY K
TWY K
RUNWAY 13R/31L
TWY J
TWY W
DRAFT
0 200' 400'
GRAPHIC SCALE IN FEET

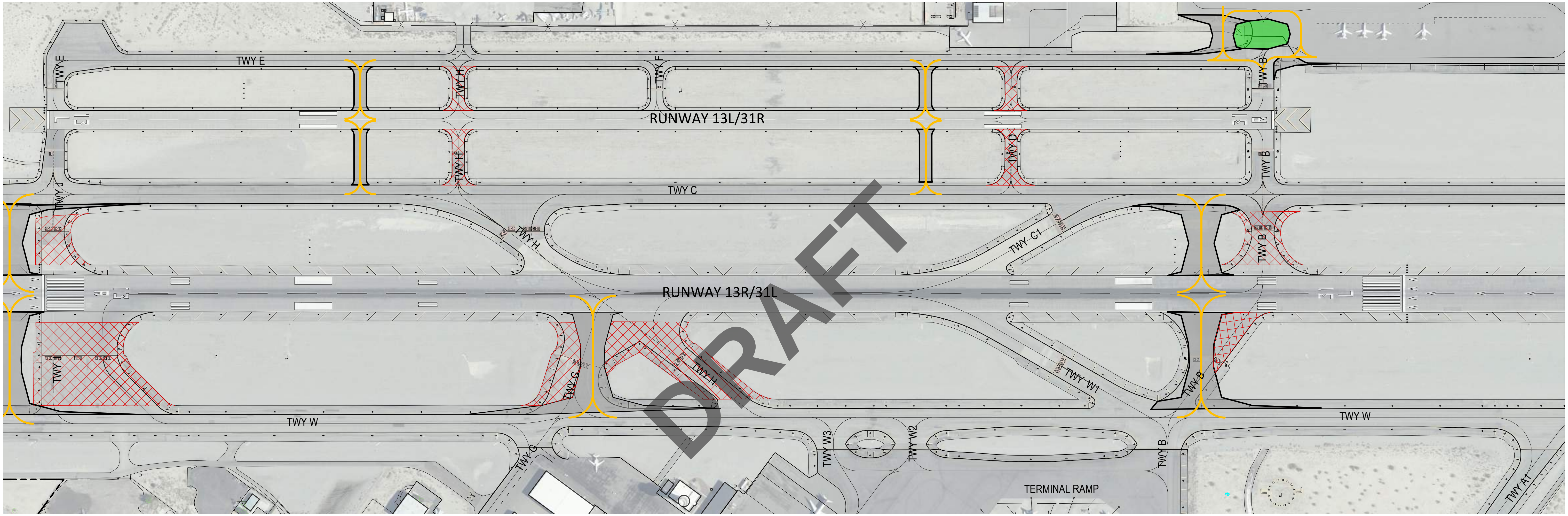
Legend

- ▨ Future Taxiway Pavement
- ☒ Future Taxiway Demo
- 🟩 Future Painted Island
- ---- Airport Property Line


RUNWAY 13L/31R
RUNWAY 13R/31L
0 1000' 2000'
GRAPHIC SCALE IN FEET

Keymap

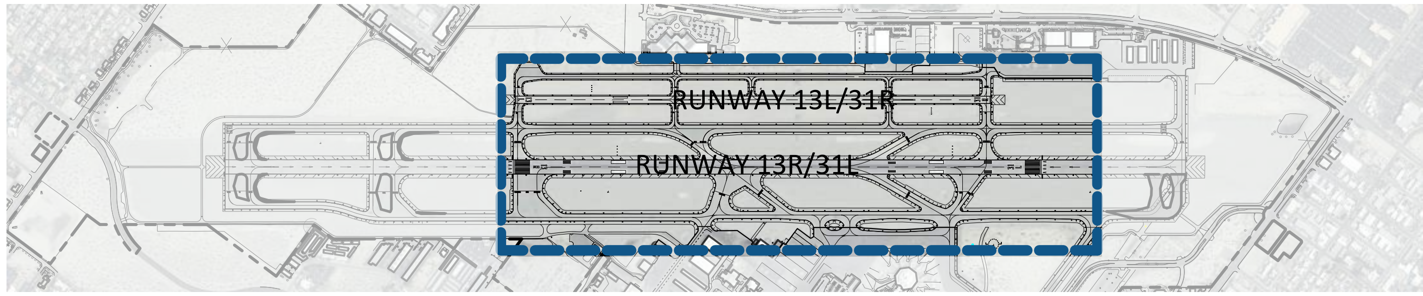
Figure 6-8: Taxiway Alternative 1 - Central Detail


TWY E
TWY E
TWY H
TWY F
TWY B
RUNWAY 13L/31R
TWY H
TWY D
TWY B
TWY J
TWY C
TWY H
TWY C1
TWY B
RUNWAY 13R/31L
TWY J
TWY G
TWY H
TWY W1
TWY B
TWY W
TWY W
TWY G
TWY W3
TWY W2
TWY B
TERMINAL RAMP
TWY A1
DRAFT

0 200' 400'
GRAPHIC SCALE IN FEET

Legend

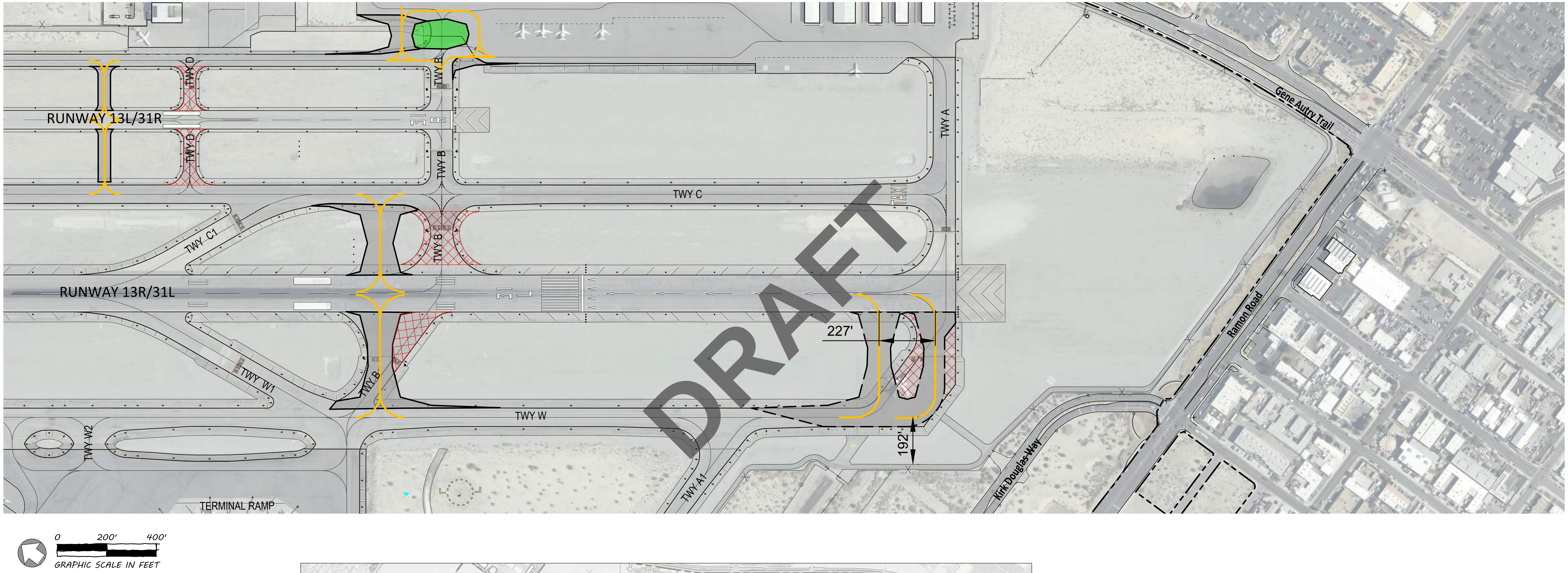
- ▨ **Future Taxiway Pavement**
- 🟥 **Future Taxiway Demo**
- 🟩 **Future Painted Island**
- ---- **Airport Property Line**


RUNWAY 13L/31R
RUNWAY 13R/31L

Keymap

0 1000' 2000'
GRAPHIC SCALE IN FEET

Figure 6-9: Taxiway Alternative 1 - South Detail


RUNWAY 13L/31R
RUNWAY 13R/31L
TWY D
TWY B
TWY A
TWY C
TWY C1
TWY W1
TWY W
TWY W2
TWY A1
TERMINAL RAMP
227'
192'
Gene Autry Trail
Ramon Road
Kirk Douglas Way
0 200' 400'
GRAPHIC SCALE IN FEET

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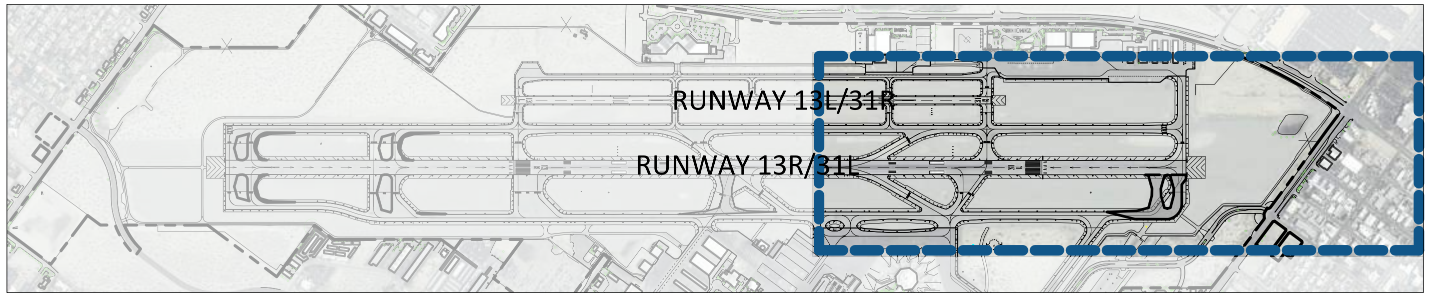
Legend

- ▩ Future Taxiway Pavement
- ▨ Future Taxiway Demo
- 🟩 Future Painted Island
- ---- Airport Property Line


RUNWAY 13L/31R
RUNWAY 13R/31L
0 1000' 2000'
GRAPHIC SCALE IN FEET

Keymap

PRELIMINARY LANDSIDE ALTERNATIVE CONCEPTS

The primary goals of the landside alternatives are to meet tenants' goals to the extent possible and determine the highest and best use of limited, on-airport developable property. This section explores the various alternatives associated with both FBOs, the PS Air Museum, the undeveloped land on the east side of the airfield, and the aircraft rescue and firefighting (ARFF).

Aircraft Storage Development Alternatives

Aircraft storage/hangar alternative concepts were developed to meet the growing demand for aviation-related development as described in previous chapters. PSP needs additional large hangars to meet the projected based aircraft demand. This section explores one potential site for development of additional aircraft storage hangars. Additional aircraft storage hangars are provided with two of the Signature Aviation Alternative concepts below. If PSP desires, more than one alternative site could be developed.

Aircraft Storage Development Alternative 1

Alternative 1, depicted on **Figure 6-10**, shows hangar development in the parcel between the PS Museum and SkyWest Maintenance. This alternative provides two 150-foot-by-150-foot hangars and four 100-foot-by-100-foot hangars. This alternative also provides a GA customs facility that will process international passengers. These hangars would accommodate most of the projected based aircraft requirements, which are expected to be primarily corporate jet type aircraft. The apron provides two connectors to Taxiway E and space for a taxilane on the apron running parallel to Taxiway E, which would provide good aircraft circulation to and from the hangars. This site provides excellent landside and airfield access.

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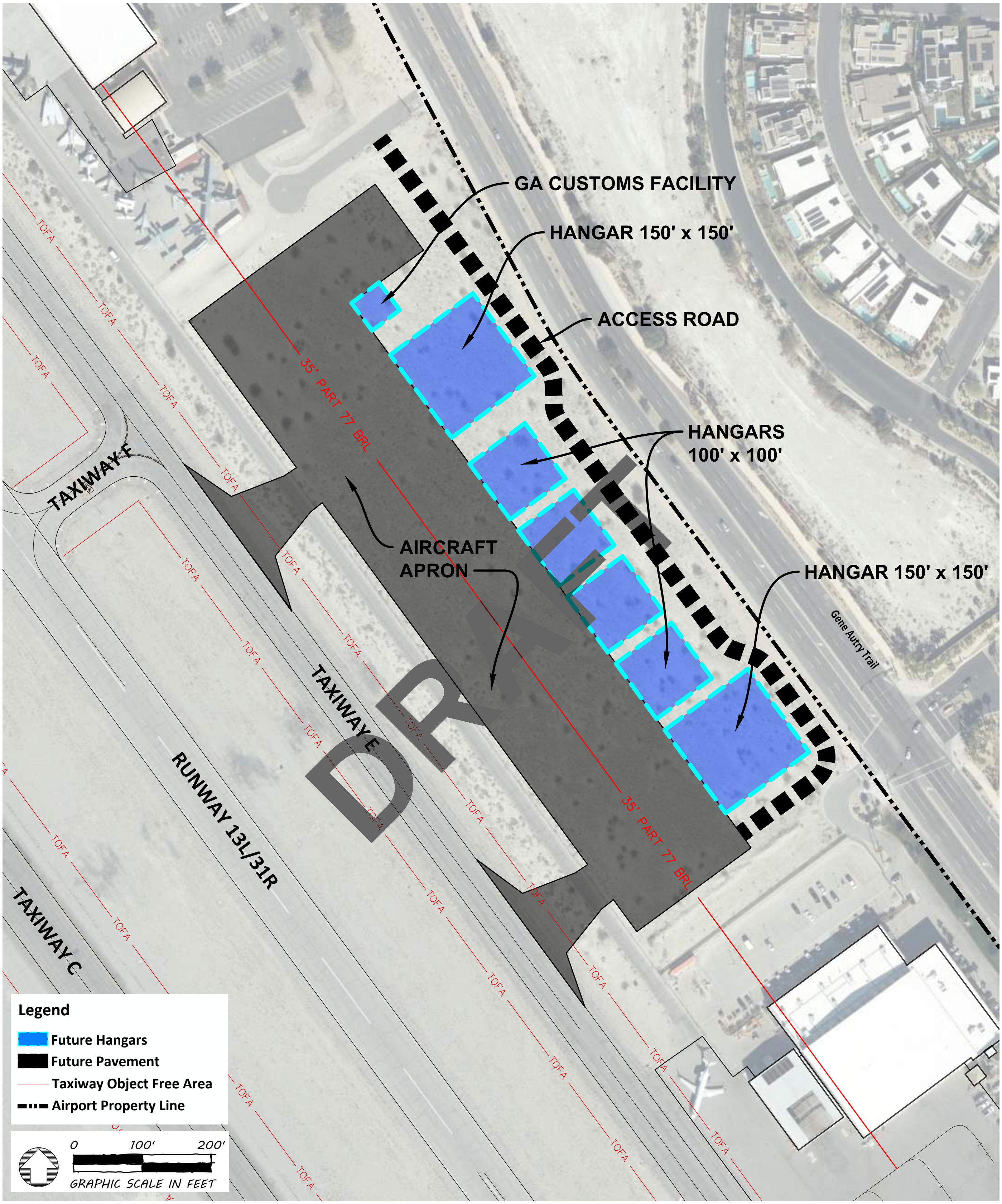
Potential Advantages of Alternative 1

- The alternative meets future based jet aircraft storage requirements.
- The alternative provides excellent airfield and landside access.
- Aircraft tails clear the Part 77 transitional surface and therefore can be parked on the apron in front of the hangars.

Potential Disadvantages of Alternative 1

- There may be higher revenue producing, aviation-related development opportunities for this parcel.
- Medium and large jet aircraft may need to cross the GA runway to operate to/from primary runway.

Figure 6-10: Aircraft Storage Development Alternative 1


GA CUSTOMS FACILITY
HANGAR 150' x 150'
ACCESS ROAD
HANGARS 100' x 100'
AIRCRAFT APRON
HANGAR 150' x 150'
Gene Autry Trail
35' PART 77 BRL
35' PART 77 BRL
TAXIWAY F
TAXIWAY E
RUNWAY 13L/31R
TAXIWAY C
TOFA
DRAFT
Legend
Future Hangars
Future Pavement
Taxiway Object Free Area
Airport Property Line
0
100'
200'
GRAPHIC SCALE IN FEET

Signature Aviation Alternative Concepts

As described in the previous chapter, the relocation of Signature Aviation's terminal and aircraft parking apron is necessary to accommodate future passenger terminal facilities. This section explores multiple potential FBO relocation sites. These alternative concepts, to the extent possible, incorporate Signature Aviation's goals, which are listed below:

- Expand fuel farm capacity.
- Maintain operational efficiency.
- Maximize apron and hangar capacity.
- Minimize cost.

Each alternative assumes that the fuel farm remains on the west side of the Airport just south of Taxilane G and is expanded, even if not depicted on the figures. The fuel farm expansion may include sustainable aviation fuel (SAF) infrastructure.

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Signature Aviation Alternative 1

Alternative 1, depicted on **Figure 6-11**, proposes a relocation of Signature Aviation's terminal and apron to the east side of the Airport on a parcel of airport-owned land near the intersection of East Tachevah Drive and Gene Autry Trail. This site is adjacent to the existing airport surveillance radar (ASR). Since the existing fuel farm will remain in its current location, this alternative requires the construction of a small fuel farm at this site to support the GA aircraft. Other than the ASR and the perimeter service road, this site remains undeveloped. Its location provides excellent airfield and landside access.

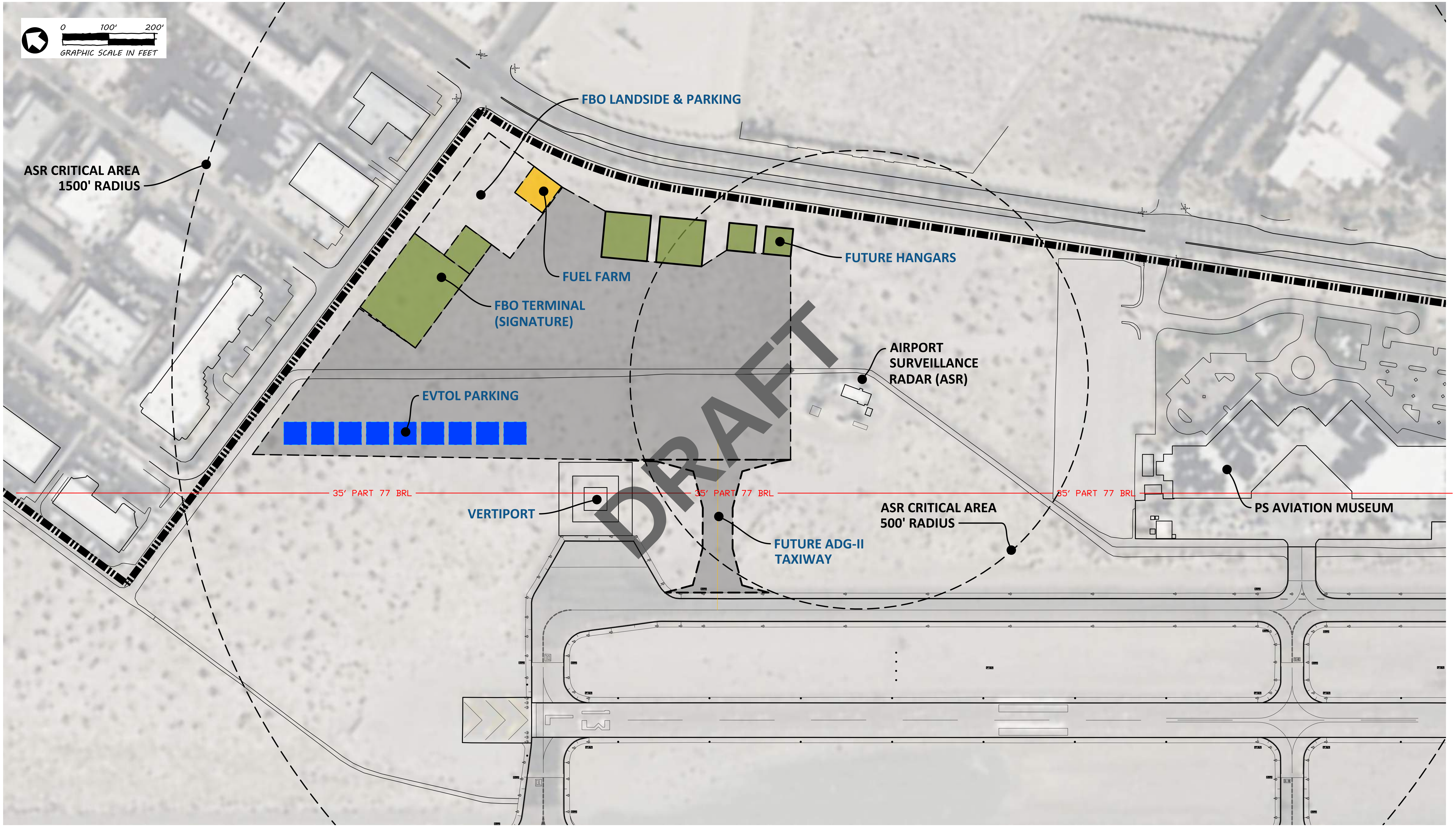
Potential Advantages of Alternative 1

- The alternative allows Signature Aviation to relocate sooner compared to other alternatives because the site is mostly undeveloped.
- The alternative provides good aircraft circulation because it allows for a large apron and provides two taxiway connectors to the apron.
- Landside wayfinding should be easy for users because Gene Autry Trail is a major arterial roadway.

Potential Disadvantages of Alternative 1

- The alternative represents higher costs and infrastructure requirements as the site is mostly undeveloped.
- The alternative requires a runway crossing for medium and large business jets to access the parcel from the airfield.

Figure 6-11: Signature Aviation Relocation Alternative 1 - Adjacent to ASR


0 100' 200'
GRAPHIC SCALE IN FEET
FBO LANDSIDE & PARKING
ASR CRITICAL AREA
1500' RADIUS
FUTURE HANGARS
FUEL FARM
FBO TERMINAL
(SIGNATURE)
AIRPORT
SURVEILLANCE
RADAR (ASR)
EVTOL PARKING
DRAFT
35' PART 77 BRL
35' PART 77 BRL
35' PART 77 BRL
VERTIPORT
ASR CRITICAL AREA
500' RADIUS
PS AVIATION MUSEUM
FUTURE ADG-II
TAXIWAY

Signature Aviation Alternative 2

Alternative 2, depicted on **Figure 6-12**, considers relocating Signature Aviation's terminal and aircraft parking apron north of its existing location, north of Alejo Road on the west side of the Airport. This site is currently used for rental car overflow parking, which generates revenue for the Airport and allows the Airport to accommodate rental car storage requirements on property. During PSP's peak season, this lot is filled with rental cars; therefore, a new rental car overflow lot would need to be identified or rental car overflow would need to be accommodated in the future consolidated rental car facility (CONRAC). The Fire Department Training Area is located just east of this lot, so a portion of this site is used by ARFF personnel for aircraft firefighting training purposes. Because of this training, this site could be contaminated with per- and polyfluoroalkyl substances (PFAS); however, an assessment has not yet been conducted. PFAS clean up could be required before Signature Aviation could relocate to this site. Also, a new aircraft firefighting training site would need to be identified. This site provides excellent airfield access.

Potential Advantages of Alternative 2

- The FBO remains closer to all of its existing facilities including hangars and the fuel farm, which would help maintain operational efficiency.
- The site is relatively undeveloped, minimizing demolition costs.
- The site has good airfield access and therefore aeronautical use would be the highest and best use of this site.

Potential Disadvantages of Alternative 2

- Part of the lot is used for a Fire Department Training Area, which requires PFAS cleanup and a relocated ARFF training location. The scope and scale of the cleanup has not yet been determined.
- The alternative requires relocation of rental car storage.
- The alternative requires the relocation of the fire training facilities on a portion of the parcel.

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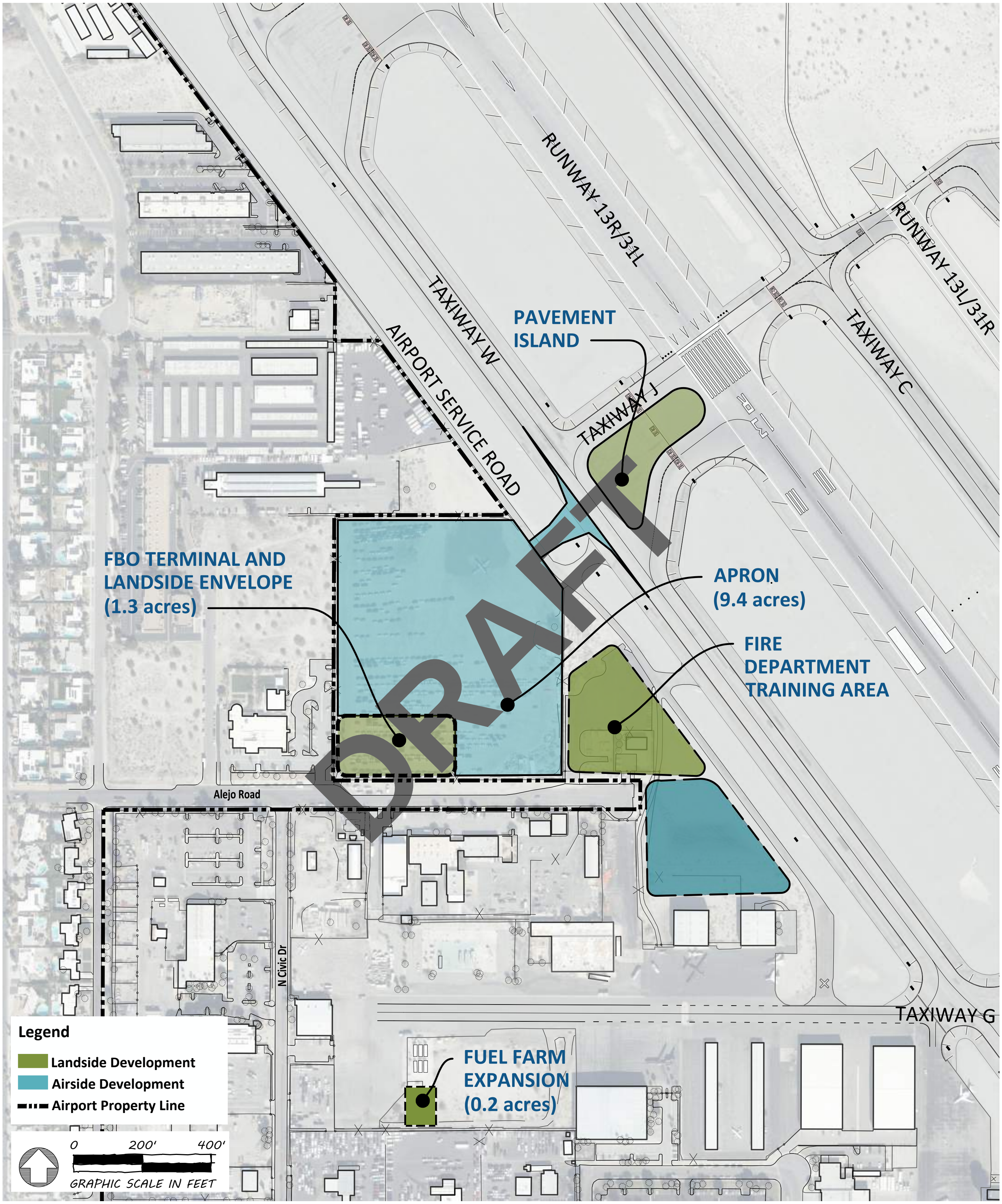
Figure 6-12: Signature Aviation Relocation Alternative 2 - Rental Car Overflow Location


RUNWAY 13R/31L
RUNWAY 13L/31R
TAXIWAY W
AIRPORT SERVICE ROAD
PAVEMENT ISLAND
TAXIWAY J
TAXIWAY C
FBO TERMINAL AND LANDSIDE ENVELOPE (1.3 acres)
APRON (9.4 acres)
FIRE DEPARTMENT TRAINING AREA
DRAFT
Alejo Road
N Civic Dr
TAXIWAY G
FUEL FARM EXPANSION (0.2 acres)
Legend
Landside Development
Airside Development
Airport Property Line
0
200'
400'
GRAPHIC SCALE IN FEET

Signature Aviation Alternative 3

Alternative 3, depicted on **Figure 6-13**, considers the potential relocation of Signature Aviation's terminal and apron north and west of its existing location. The terminal in this alternative would be constructed over a portion of the eastmost existing rental car maintenance facility. A new 30,000-square-foot transient aircraft storage hangar is shown over a portion of the westmost existing rental car maintenance facility. The remaining portions of the existing rental car maintenance facilities following their relocation to the CONRAC are converted to an aircraft parking apron. This alternative also relocates and reserves space for fuel farm expansion and also relocates fuel truck parking. Both are relocated to just west of the existing fuel farm location. Although not necessary, relocating the fuel farm allows for better aircraft circulation with the new location of the FBO. Additionally, this alternative provides various sized hangars and a GA customs facility that are located south of Alejo Road as well as in the parcel between Alejo Road and Taxiway W. These hangars could be leased to the FBO or could be built by a private developer. The hangars shown south of Alejo Road require several existing facilities to be demolished and relocated including airport maintenance facilities. Airport maintenance is relocated to the corner of Alejo Road and N Civic Drive. Finally, this alternative shows a future flight kitchen located along N Civic Drive.

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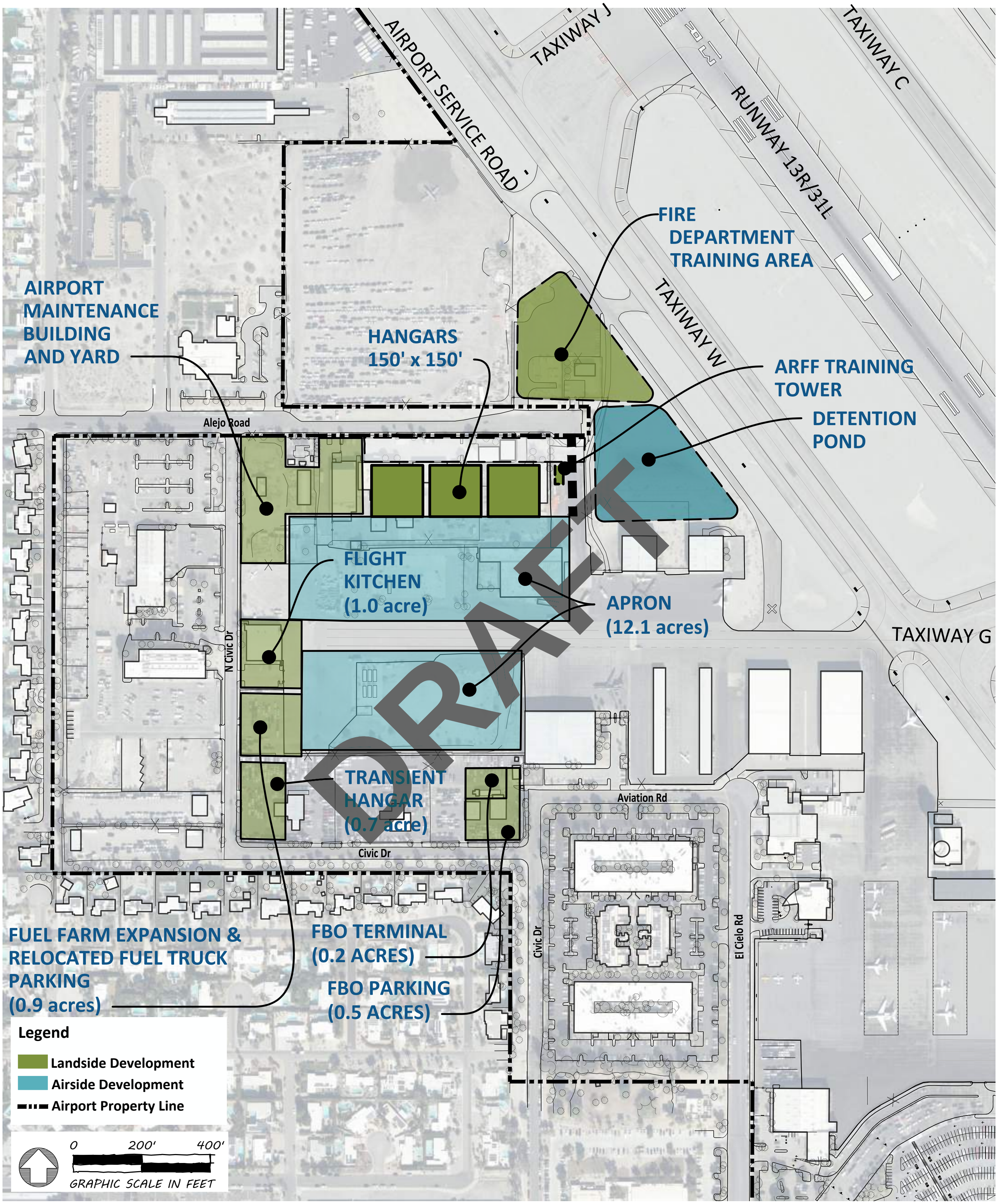
Potential Advantages of Alternative 3

- The FBO remains closer to all of its existing facilities including hangars and the fuel farm, which would help maintain operational efficiency.
- The terminal would be accessed via Civic Drive instead of El Cielo Road but still have convenient access to Tahquitz Canyon Way and downtown Palm Springs.
- Existing Taxilane G provides efficient airfield access.
- The alternative provides more aircraft parking apron than the existing condition does.
- Although this alternative is constructed over the existing rental car maintenance facilities, the space for these facilities is accounted for with the new CONRAC.
- The alternative provides a variety of hangar sizes.
- The alternative does not require relocation of the electrical substation.

Potential Disadvantages of Alternative 3

- The alternative requires relocation of the existing fuel truck and spill protection facilities to improve aircraft circulation.
- The alternative requires facility demolition before a new FBO terminal can be constructed.
- Hangar development in this area requires demolition and relocation of several existing facilities.
- The alternative creates congestions along Taxilane G, which can impact Signature Aviation's operation.

Figure 6-13: Signature Aviation Relocation Alternative 3 - South of Taxilane G Location


AIRPORT SERVICE ROAD
TAXIWAY J
TAXIWAY C
RUNWAY 13R/31L
FIRE DEPARTMENT TRAINING AREA
TAXIWAY W
AIRPORT MAINTENANCE BUILDING AND YARD
HANGARS 150' x 150'
ARFF TRAINING TOWER
DETENTION POND
Alejo Road
FLIGHT KITCHEN (1.0 acre)
APRON (12.1 acres)
TAXIWAY G
N Civic Dr
TRANSIENT HANGAR (0.7 acre)
Aviation Rd
Civic Dr
Civic Dr
El Cielo Rd
FUEL FARM EXPANSION & RELOCATED FUEL TRUCK PARKING (0.9 acres)
FBO TERMINAL (0.2 ACRES)
FBO PARKING (0.5 ACRES)
Legend
🟩 Landside Development
🟦 Airside Development
Airport Property Line
0
200'
400'
GRAPHIC SCALE IN FEET

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Signature Aviation Alternative 4

Alternative 4 is depicted on **Figure 6-14**. Similar to Alternative 3, this alternative relocates Signature Aviation’s terminal and apron north and west of its existing location. The terminal in this alternative is planned to be relocated to the space where the former Quonset Hut was located. The space in front of the terminal that currently stores trailers is converted to aircraft parking apron. The existing fuel truck parking location and existing building north of Taxilane G are also converted to aircraft parking apron. This alternative expands and relocates the fuel farm to the Desert Aero Maintenance Center. A flight kitchen is shown over the westmost existing rental car maintenance facility. A new 30,000-square-foot transient hangar is shown over a portion of the two remaining existing rental car maintenance facilities and a GA customs facility adjacent to the transient hangar. The remaining portions of the existing rental car maintenance facilities is converted to aircraft parking apron. Finally, this alternative provides four large hangars south of Alejo Road. These hangars require several existing facilities to be demolished and relocated including airport maintenance facilities. Airport maintenance is relocated to the parcel between Alejo Road and Taxiway W.

Potential Advantages of Alternative 4

- The FBO remains close to all of its existing facilities allowing them to operate efficiently.
- Terminal access is via N Civic Drive, close to the existing FBO terminal, making wayfinding simple.
- The alternative maximizes aircraft parking apron.
- Existing Taxilane G provides efficient airfield access.
- The electrical substation does not need to be relocated.

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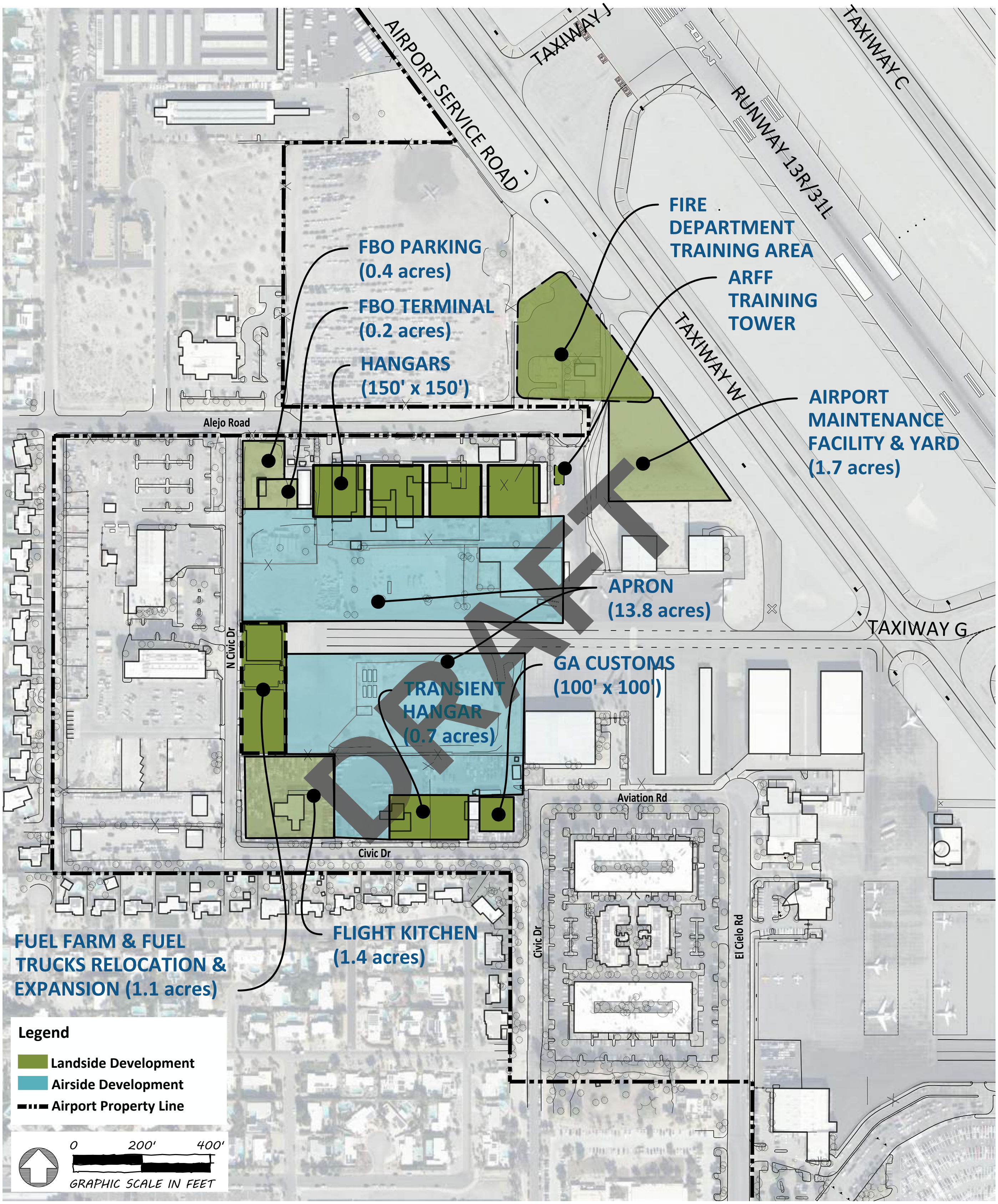
Potential Disadvantages of Alternative 4

- The alternative requires the relocation of existing fuel truck and spill protection facilities.
- The alternative requires facility demolition before FBO terminal and hangars can be constructed.
- The alternative creates congestion along Taxilane G, which can impact Signature Aviation’s operation.

Figure 6-14: Signature Aviation Relocation Alternative 4 - North of Taxilane G Location


TAXIWAY J
AIRPORT SERVICE ROAD
RUNWAY 13R/31L
TAXIWAY C
FIRE DEPARTMENT TRAINING AREA
FBO PARKING (0.4 acres)
ARFF TRAINING TOWER
FBO TERMINAL (0.2 acres)
TAXIWAY W
HANGARS (150' x 150')
AIRPORT MAINTENANCE FACILITY & YARD (1.7 acres)
Alejo Road
APRON (13.8 acres)
TAXIWAY G
N Civic Dr
GA CUSTOMS (100' x 100')
TRANSIENT HANGAR (0.7 acres)
Aviation Rd
Civic Dr
Civic Dr
El Cielo Rd
FUEL FARM & FUEL TRUCKS RELOCATION & EXPANSION (1.1 acres)
FLIGHT KITCHEN (1.4 acres)
Legend
Landside Development
Airside Development
Airport Property Line
0
200'
400'
GRAPHIC SCALE IN FEET

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Signature Aviation Alternatives Summary

Each alternative is summarized below. **Table 6-4** provides a comparison of the alternatives presented above.

- **Alternative 1** – relocates FBO terminal and apron to east side adjacent to ASR's current location.
- **Alternative 2** – relocates FBO terminal and apron to existing rental car overflow parking lot.
- **Alternative 3** – relocates FBO terminal and apron south of Taxilane G.
- **Alternative 4** – relocates FBO terminal and apron north of Taxilane G.

Table 6-4: Signature Aviation Alternatives Comparison

Item	Alt 1	Alt 2	Alt 3	Alt 4
New aircraft parking apron (acres)	8	9	12	14
New hangar/landside (acres)	2	1	4	3
New development (acres)	10	10	16	17

Source: *Mead & Hunt, 2023.*

Note: *Acreage is approximate.*

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Signature Aviation Recommendation

Relocating Signature Aviation to the east side of the airfield (Alternative 1) is the preferred alternative because the new site is mostly undeveloped, provides excellent airfield and landside access, and provides easy access to the new GA customs facility.

Atlantic Aviation Alternative Concepts

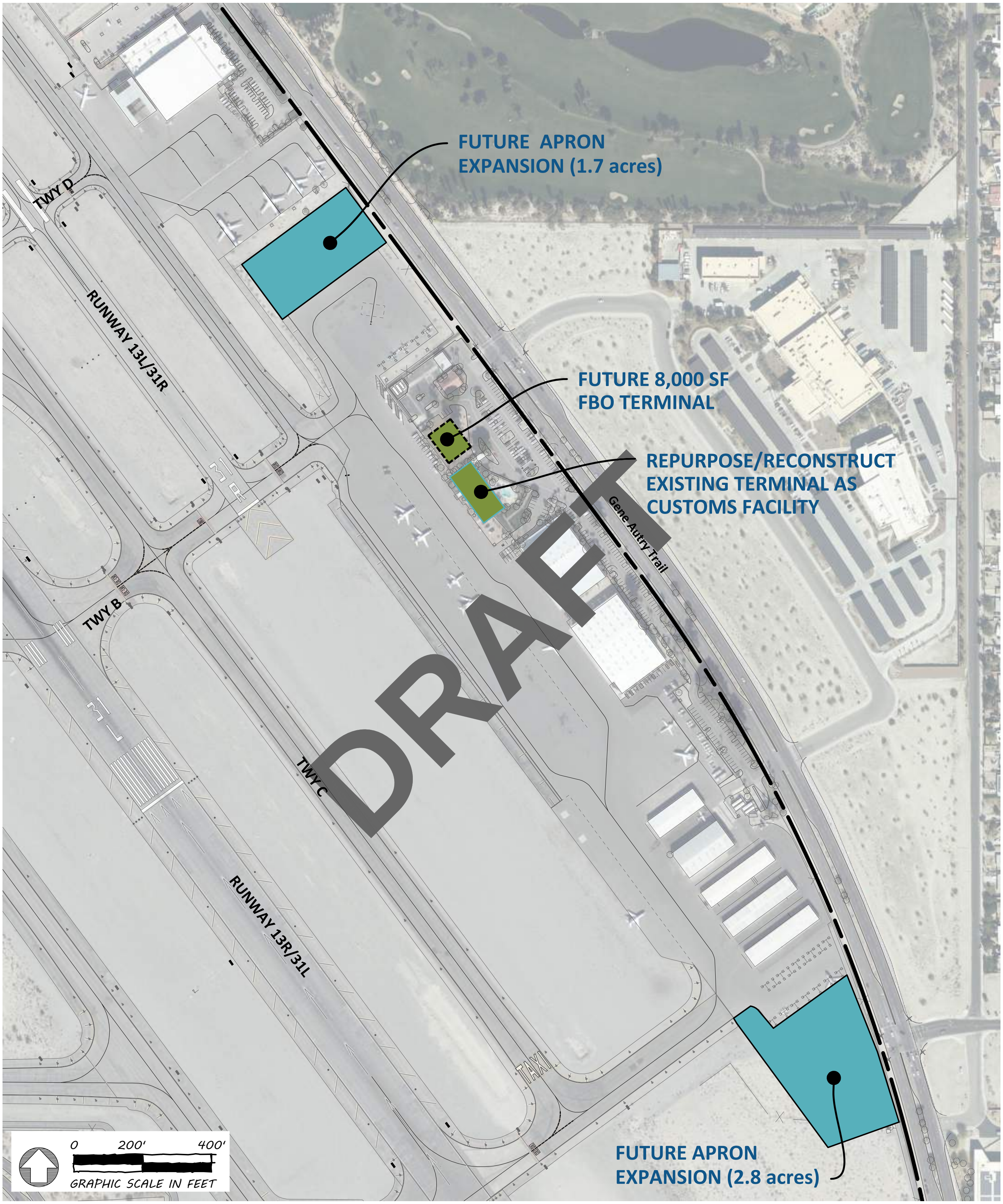
Atlantic Aviation's goals from this master plan are listed below:

- New 8,000-square-foot terminal.
- Customs facility.
- Maximize aircraft parking apron.
- Maximize current lease hold.

Atlantic Aviation Development Concept

Figure 6-15 depicts Atlantic Aviation's development concept. An 8,000-square-foot terminal is shown adjacent to the existing FBO terminal. This terminal could be a new facility or an expansion to the existing building. An apron expansion is provided on the north and south ends of the leasehold to maximize parking positions for aircraft.

Figure 6-15: Atlantic Aviation Expansion



FUTURE APRON EXPANSION (1.7 acres)
FUTURE 8,000 SF FBO TERMINAL
REPURPOSE/RECONSTRUCT EXISTING TERMINAL AS CUSTOMS FACILITY
FUTURE APRON EXPANSION (2.8 acres)
TWY D
TWY B
TWY C
RUNWAY 13L/31R
RUNWAY 13R/31L
Gene Autry Trail
31 R
31 L
TAXI
0
200'
400'
GRAPHIC SCALE IN FEET

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Electric Aircraft Alternatives

The purpose of these electric aircraft development alternative concepts is to explore alternative layouts and configurations for aircraft charging stations, aircraft parking, takeoff and landing requirements, and safety regulations and requirements at PSP. The goal of these concepts is to plan for the potential fleet of electric aircraft within the planning period – 2022 to 2042. The alternative concepts delineate targeted areas for electric aircraft charging infrastructure and electric aircraft parking.

It is important to note that various components of these concepts can be mixed and matched to develop the preferred electric aircraft development concept.

Electric Aircraft Alternative 1

Alternative 1, depicted on **Figure 6-16**, provides two separate vertiports on each of the FBO's aprons. The vertiport allows the electric aircraft to operate without disrupting operations on either of the runways. The vertiport provides six electric vertical takeoff and landing (eVTOL) aircraft parking positions. Located on the FBO aprons, both vertiports provide terminals to process passengers. Both locations provide good landside and airfield access.

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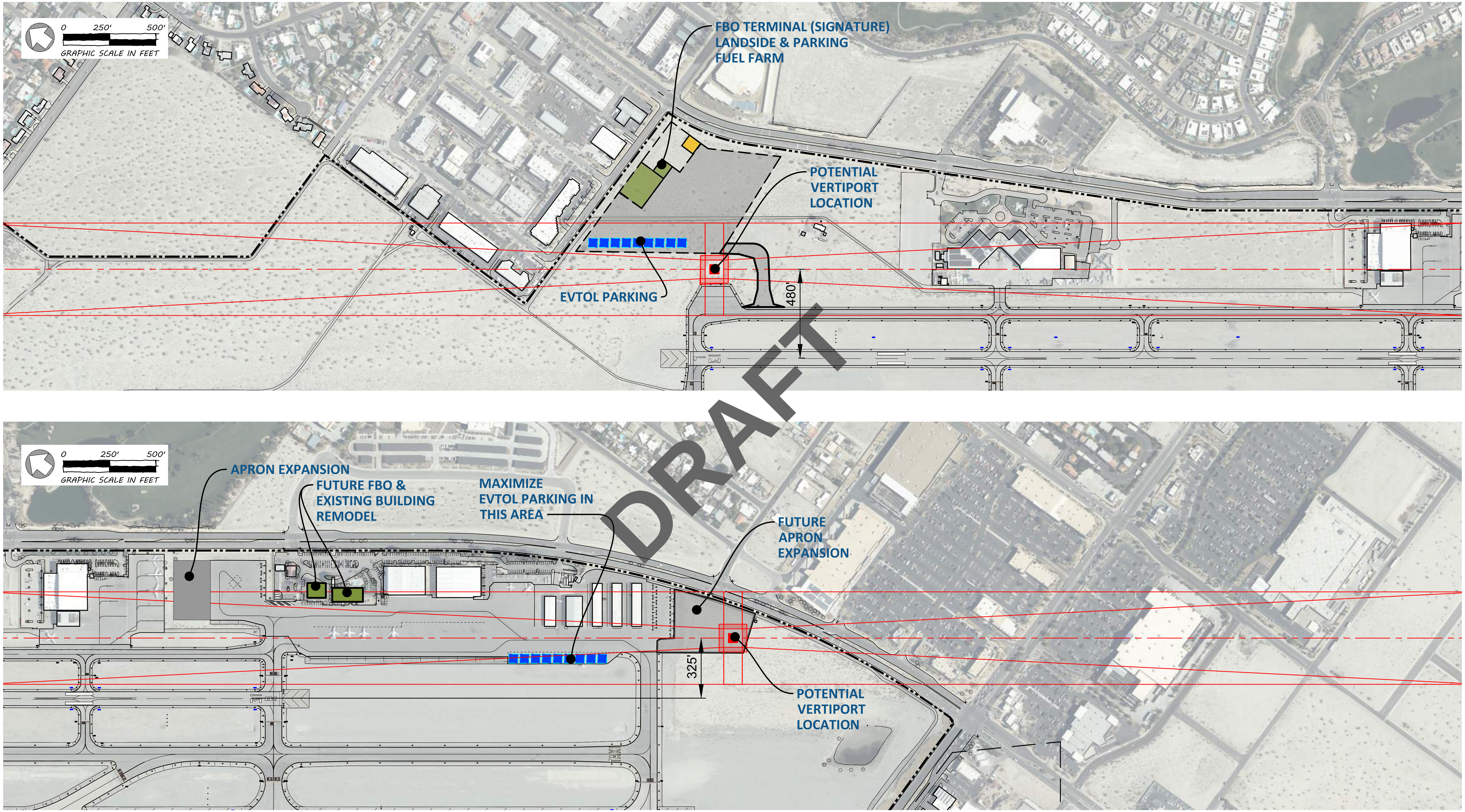
Potential Advantages of Alternative 1

- The alternative is located adjacent to the FBO, which is beneficial for eVTOL users.
- The alternative would not interfere with operations conducted on runways.
- The alternative utilizes existing/planned terminals, so it does not require construction of an additional terminal.
- The alternative utilizes planned apron space, which can be used for fixed-wing aircraft and helicopter parking until the demand of eVTOL parking and vertiports are needed.
- The alternative allows the Airport to gauge interest in the electric infrastructure before a complete build-out of a future facility with multiple charging stations.

Potential Disadvantages of Alternative 1

- The alternative is furthest from the Airport Terminal for passengers needing to access commercial flights.
- The alternative has limited expansion potential due to proximity to other lease holds and the property line.
- Charging infrastructure would be dependent on electric supply access in this location.

Figure 6-16: Electric Aircraft Alternative 1


0 250' 500'
GRAPHIC SCALE IN FEET
FBO TERMINAL (SIGNATURE)
LANDSIDE & PARKING
FUEL FARM
POTENTIAL
VERTIPORT
LOCATION
EVTOL PARKING
480'
0 250' 500'
GRAPHIC SCALE IN FEET
APRON EXPANSION
FUTURE FBO &
EXISTING BUILDING
REMODEL
MAXIMIZE
EVTOL PARKING IN
THIS AREA
FUTURE
APRON
EXPANSION
325'
POTENTIAL
VERTIPORT
LOCATION

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Electric Aircraft Alternative 2

Alternative 2, shown in **Figure 6-17**, provides a vertiport in the open parcel between Taxiway W and Alejo Road. The vertiport would potentially allow electric aircraft to operate without disrupting operations on either of the runways. The vertiport provides four eVTOL parking positions and an independent terminal to process its users. This parcel provides good landside access to Alejo Road and good airfield access for eVTOL or helicopters flying runway approaches and hover taxiing.

Potential Advantages of Alternative 2

- The alternative would not interfere with operations conducted on runways.
- The alternative provides a separate terminal, which would be beneficial for eVTOL users.
- The alternative provides good landside access and airfield access.

Potential Disadvantages of Alternative 2

- Charging infrastructure would be dependent on electric supply access in this location.
- The parcel does not have direct access to either FBO.
- This site may have existing drainage issues.

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Electric Aircraft Alternative 3

Alternative 3, shown in **Figure 6-18**, provides a conceptual layout of vertiport and eVTOL aircraft parking in the open parcel between PS Air Museum and SkyWest Maintenance. The vertiport allows the electric aircraft to operate without disrupting operations on either of the runways. The concept provides six eVTOL parking positions and has the capacity to grow in both directions. A terminal is provided to process its users. This parcel provides good landside and airfield access.

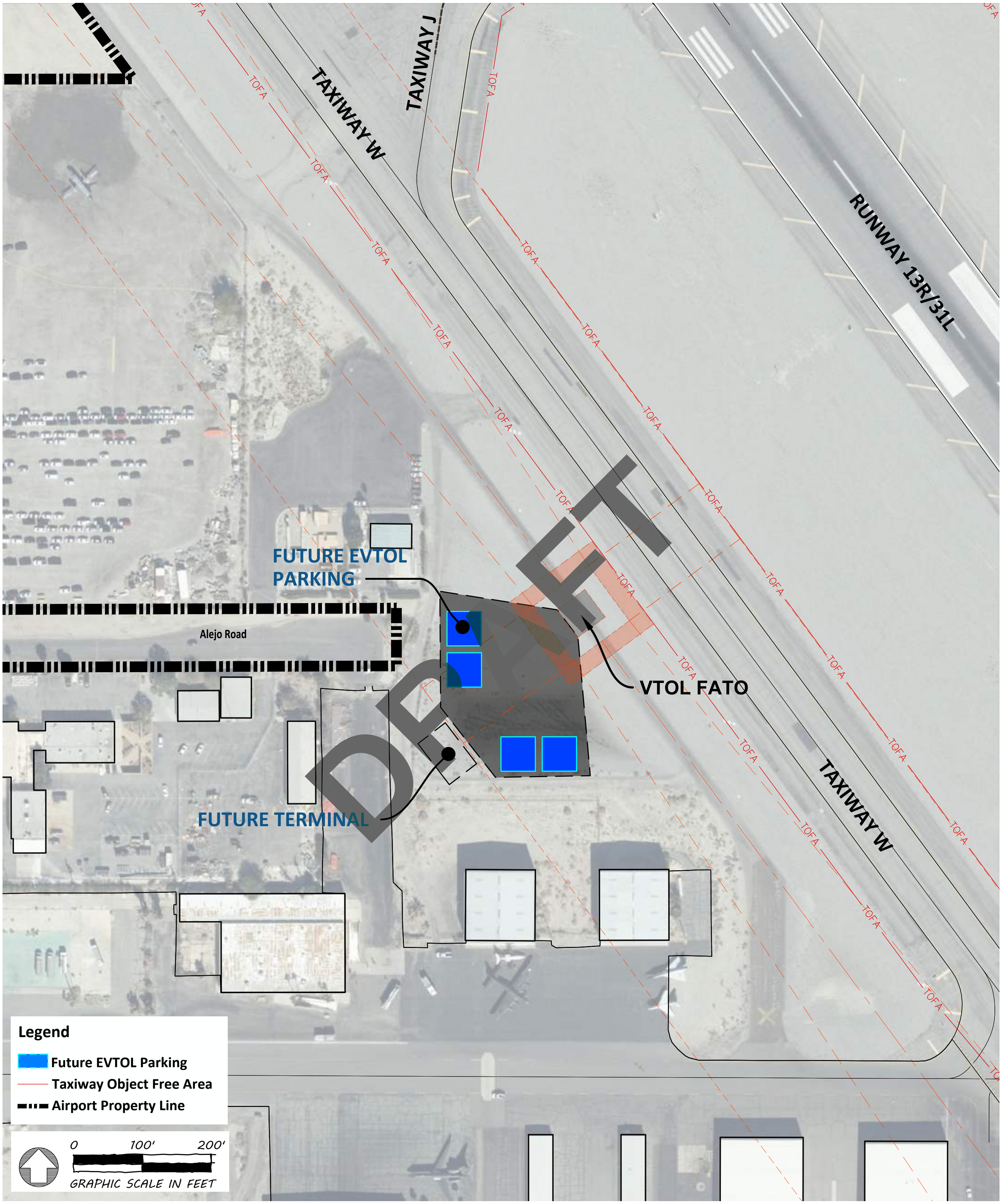
Potential Advantages of Alternative 3

- The alternative would not interfere with operations conducted on runways.
- The alternative provides an independent terminal, which is beneficial for eVTOL users.
- The alternative provides good airfield and landside access.
- The alternative allows for eVTOL aircraft parking expansion.

Potential disadvantages of Alternative 3 include:

- Charging infrastructure would be dependent on electric supply access in this location.
- This location is not adjacent to either FBO and would likely require a separate terminal to process users and passengers.

Figure 6-17: Electric Aircraft Alternative 2



TAXIWAY W
TAXIWAY J
RUNWAY 13R/31L
TOFA
FUTURE EVTOL PARKING
Alejo Road
VTOL FATO
FUTURE TERMINAL
TAXIWAY W
Legend
Future EVTOL Parking
Taxiway Object Free Area
Airport Property Line
0
100'
200'
GRAPHIC SCALE IN FEET

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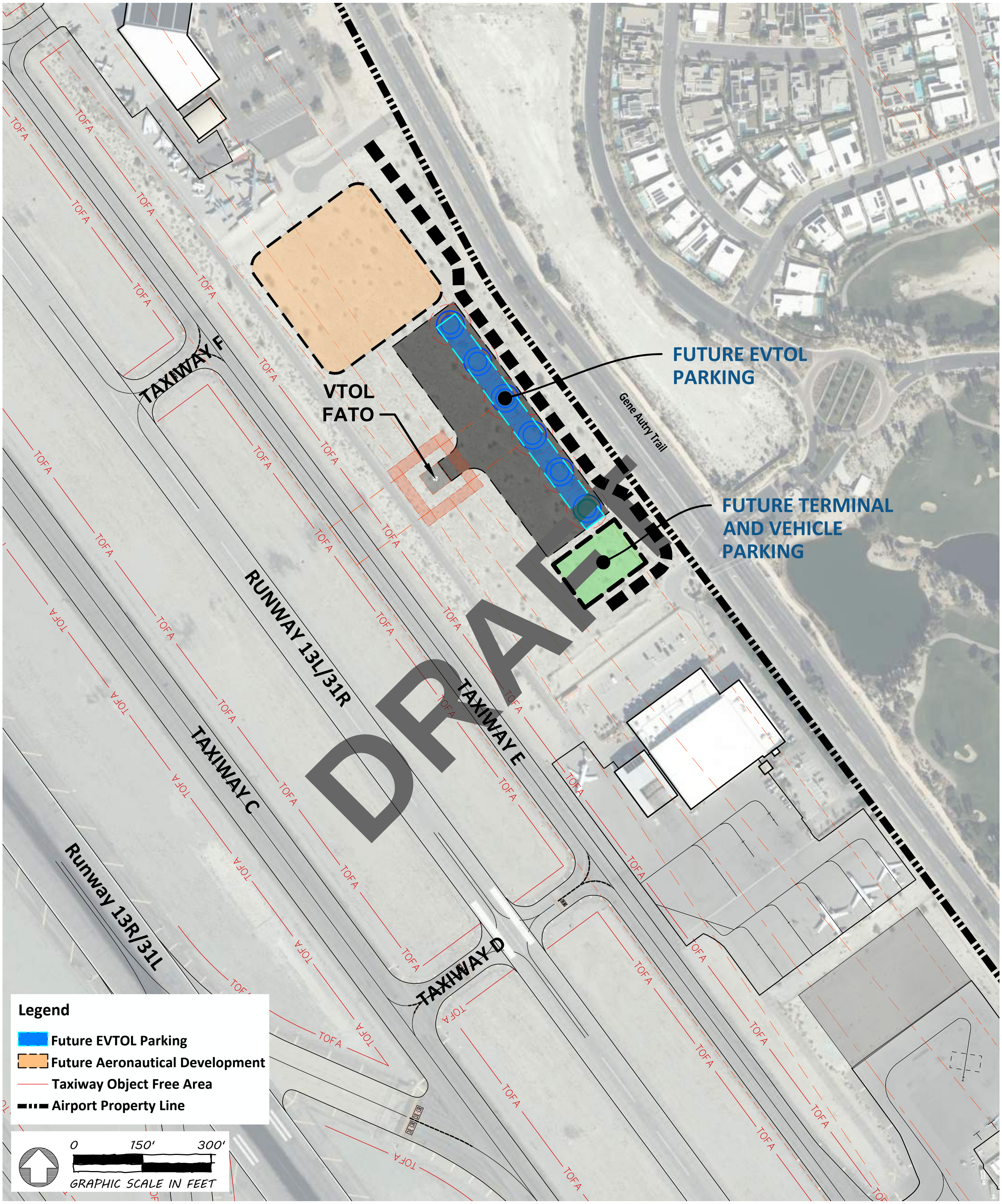
Figure 6-18: Electric Aircraft Alternative 3


FUTURE EVTOL PARKING
VTOL FATO
FUTURE TERMINAL AND VEHICLE PARKING
Gene Autry Trail
TAXIWAY F
RUNWAY 13L/31R
TAXIWAY E
TAXIWAY C
Runway 13R/31L
TAXIWAY D
TOFA
DRAFT
Legend
Future EVTOL Parking
Future Aeronautical Development
Taxiway Object Free Area
Airport Property Line
0
150'
300'
GRAPHIC SCALE IN FEET

Electric Aircraft Alternative 4

Alternative 4, shown in **Figure 6-19**, provides a potential future vertiport and up to 12 eVTOL parking positions on top of the planned CONRAC. Also illustrated are approach and departure paths parallel to the runway and the prevailing winds at PSP. The alternative includes a landside area for passenger pickup and drop off. The vertiport and parking positions would potentially allow electric aircraft to operate in close proximity to the terminal and transfer passengers to and from the terminal without disrupting operations on the runways. A potential future use for this facility could be for shuttling passengers to and from down valley resorts and increase airport connectivity for Palm Springs Visitors.

Potential Advantages of Alternative 4

- The alternative would not interfere with operations conducted on runways.
- The site is located in close proximity to the commercial terminal.
- The alternative utilizes eVTOL parking space on the future CONRAC.
- Since developable space on-airport property is limited and vertiport surfaces require a significant amount of space, the vertiport in this alternative does not impact developable space because it is built on top of a structure rather than the ground.

Potential Disadvantages of Alternative 4

- Charging infrastructure would be dependent on electric supply access in this location.
- The alternative does not have direct access to either FBO.
- The alternative reduces the number of vehicle parking spaces provided in the CONRAC.

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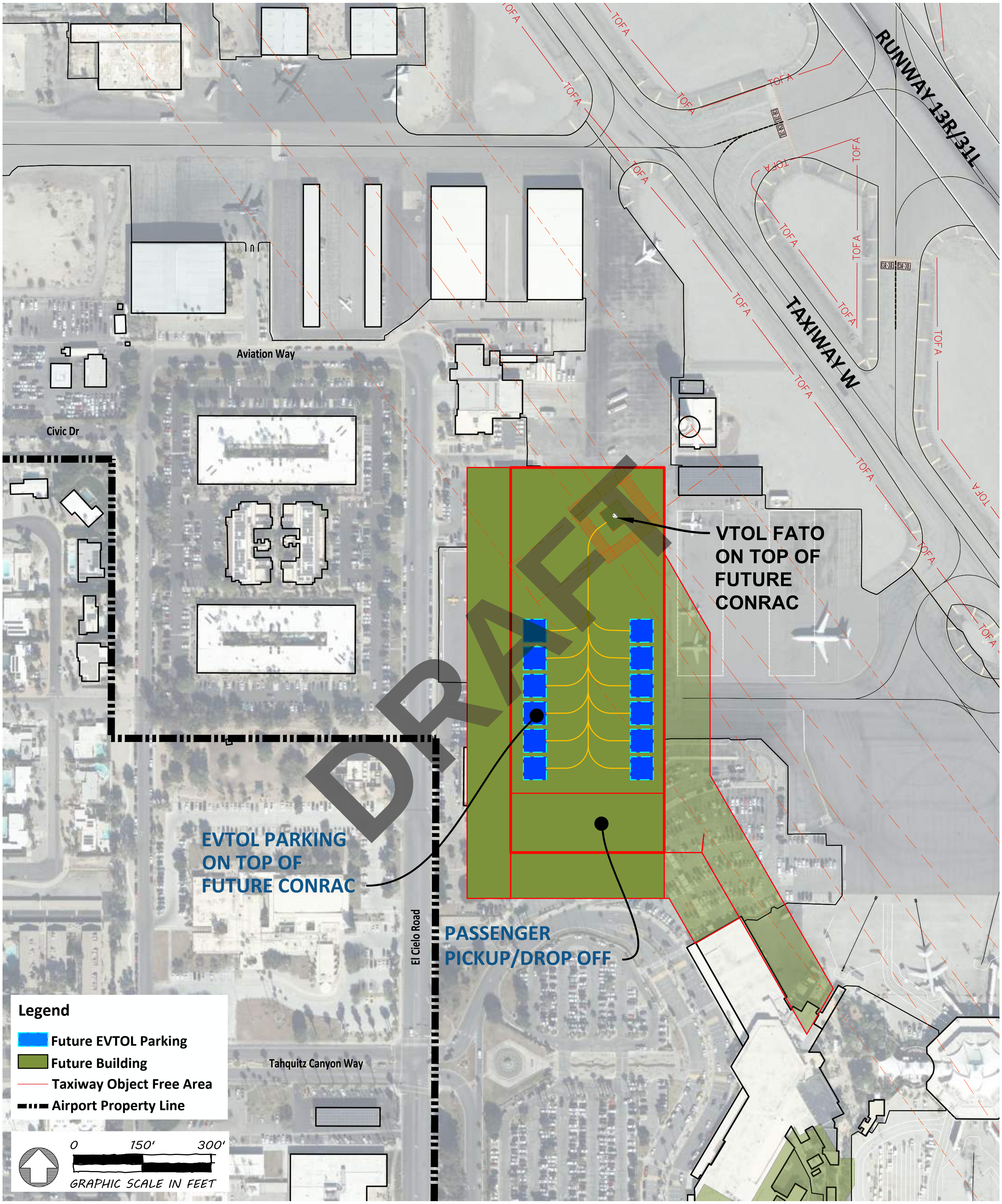
Figure 6-19: Electric Aircraft Alternative 4


RUNWAY 13R/31L
TAXIWAY W
TOFA
Aviation Way
Civic Dr
El Cielo Road
Tahquitz Canyon Way
Legend
🟦 Future EVTOL Parking
🟩 Future Building
Taxiway Object Free Area
Airport Property Line
0
150'
300'
GRAPHIC SCALE IN FEET

VTOL FATO ON TOP OF FUTURE CONRAC

EVTOL PARKING ON TOP OF FUTURE CONRAC

PASSENGER PICKUP/DROP OFF

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Electric Aircraft Alternatives Summary

Each alternative is summarized below.

- **Alternative 1** – vertiport on both FBO aprons.
- **Alternative 2** – vertiport in parcel between Taxiway W and Alejo Road.
- **Alternative 3** – vertiport in the parcel between the PS Air Museum and SkyWest Maintenance.
- **Alternative 4** – vertiport on top of planned CONRAC.

Electric Aircraft Recommendation

The recommended electric aircraft alternative is to provide a vertiport on both FBO aprons (Alternative 1) because it utilizes existing/planned terminals and apron space, does not interfere with operations conducted on the runways, and provides good airfield and landside access.

Aircraft Rescue and Fire Fighting Alternative Concepts

The existing ARFF facility is shared with the city fire station. The building has reached the end of its useful life. Therefore, the facility needs to be reconstructed. This section explores three alternatives for new potential sites. As discussed in the **Airside and Landside Facility Requirements** chapter, the ARFF must fall within a three-minute response range to the midpoint of the commercial service runway (Runway 13R/31L). It is also recommended to maintain truck access to both ends of the primary runway in less than 3 minutes. It is assumed that the ARFF and City of Palm Springs fire station will continue to share a facility. The Airport is in the process of planning and designing a new ARFF training tower. The proposed location of this facility is shown on each alternative.

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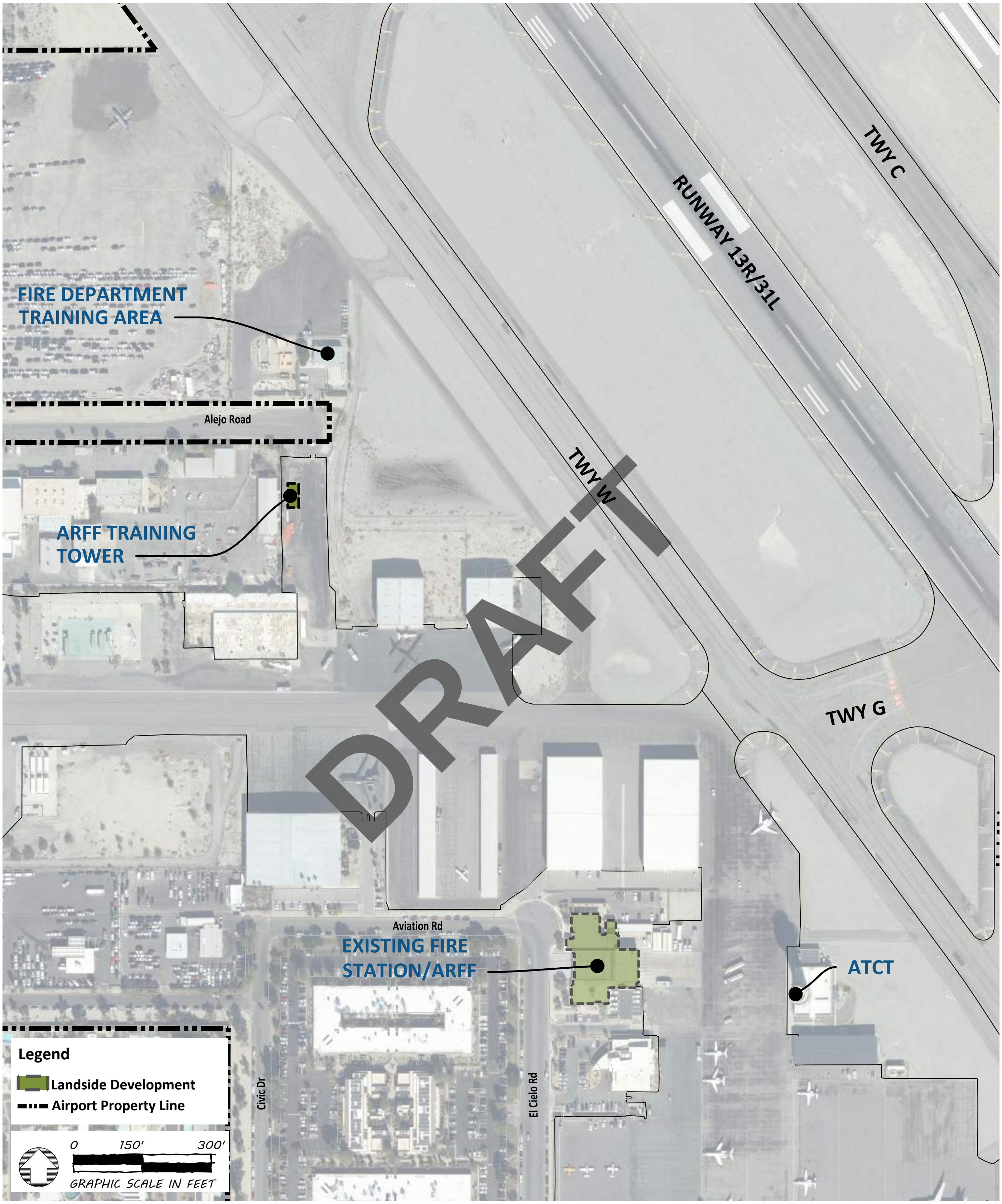
ARFF Alternative 1

Alternative 1, depicted on **Figure 6-20**, reconstructs the facility at its existing location. This site not only falls within the required three-minute range, but it is also the most central site of the three alternatives. Since this alternative rebuilds the facility in its existing location, this site meets the city fire station's required response times. This site provides good landside access on El Cielo Road, which has a cul-de-sac that can make it easier for the fire trucks to enter and exit the fire station. As this facility is reconstructed, a temporary facility would need to be identified to allow both the city fire station and ARFF to remain active.

Figure 6-20: ARFF Alternative 1



RUNWAY 13R/31L
TWY C
TWY W
TWY G
FIRE DEPARTMENT TRAINING AREA
Alejo Road
ARFF TRAINING TOWER
Aviation Rd
EXISTING FIRE STATION/ARFF
ATCT
Civic Dr
El Cielo Rd
Legend
Landside Development
Airport Property Line
0
150'
300'
GRAPHIC SCALE IN FEET

DRAFT

Potential Advantages of Alternative 1

- This alternative is the most central site.
- The site provides good landside access and a cul-de-sac that makes it easy for firetrucks to enter and exit the fire station.

Potential Disadvantages of Alternative

- The airport will need a temporary facility during reconstruction.

ARFF Alternative 2

Alternative 2, shown on **Figure 6-21**, relocates the facility to the vacant parcel of land just off of Alejo Road. This site is adjacent to the Fire Department Training Area, which makes it easier for ARFF personnel to get to and from both facilities. This site provides great airfield access for ARFF trucks with direct access to Taxiway W. The site also provides good landside access, and Alejo Road provides a cul-de-sac that would facilitate the firetrucks entering and exiting the fire station.

Potential Advantages of Alternative 2

- The alternative consolidates the ARFF facility with the Fire Department Training Area.
- The site is adjacent to Taxiway W making it easier for ARFF trucks to respond.
- The site provides good landside access and a cul-de-sac that makes it easy for fire trucks to get in and out of fire station.

Potential Disadvantages of Alternative 2

- This site, unlike the others, could be used for other aeronautical activity, for example, a new hangar.

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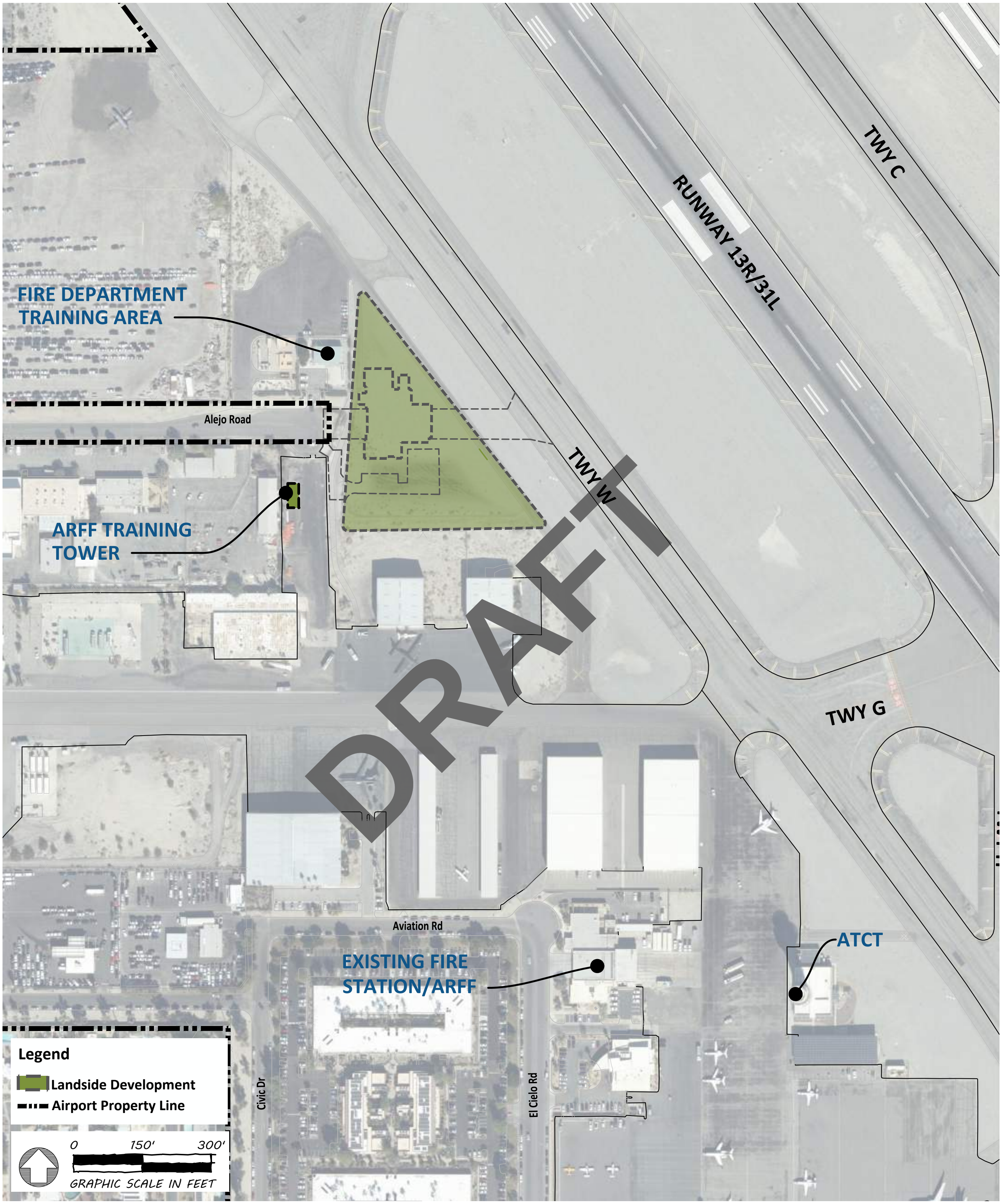
Figure 6-21: ARFF Alternative 2


FIRE DEPARTMENT TRAINING AREA
Alejo Road
ARFF TRAINING TOWER
TWY W
RUNWAY 13R/31L
TWY C
TWY G
Aviation Rd
EXISTING FIRE STATION/ARFF
ATCT
Civic Dr
El Cielo Rd
Legend
🟩 Landside Development
Airport Property Line
0
150'
300'
GRAPHIC SCALE IN FEET

DRAFT

ARFF Alternative 3

Alternative 3, depicted on **Figure 6-22**, relocates the facility north of the existing Fire Department Training Area. This site provides direct access to Taxiway W, making it easier for ARFF trucks to respond. The site also provides good landside access, which comes off of Alejo Road. However, this site is smaller than the other two alternatives.

Potential Advantages of Alternative 3

- This alternative consolidates the ARFF facility with the Fire Department Training Area.
- The site is adjacent to Taxiway W making it easier for ARFF trucks to respond.

Potential Disadvantages of Alternative 3

- This site is smaller than the other two alternatives.
- This site may have existing drainage issues.

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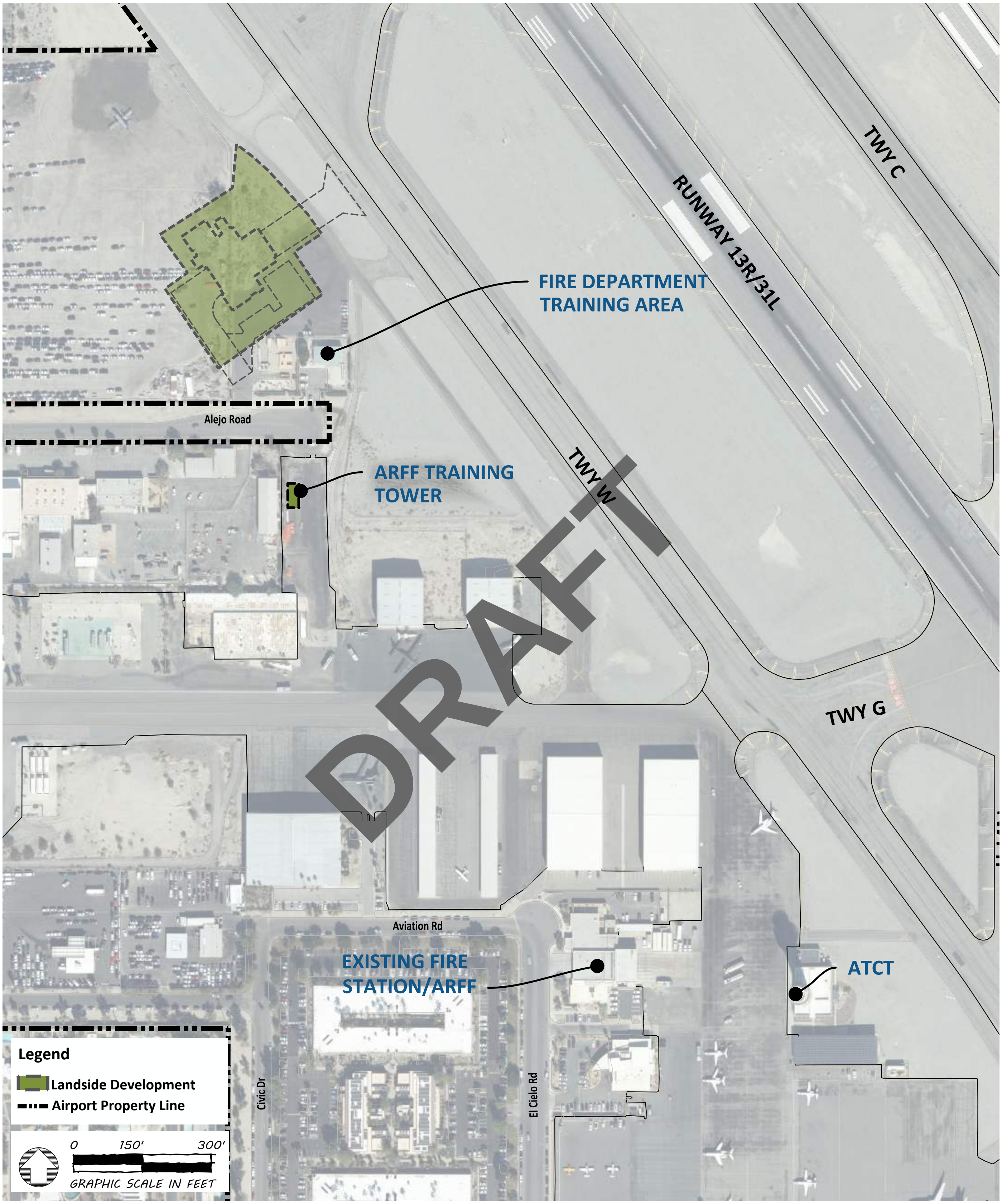
Figure 6-22: ARFF Alternative 3


TWY C
RUNWAY 13R/31L
FIRE DEPARTMENT TRAINING AREA
Alejo Road
ARFF TRAINING TOWER
TWY W
TWY G
Aviation Rd
EXISTING FIRE STATION/ARFF
ATCT
Civic Dr
El Cielo Rd
Legend
Landside Development
Airport Property Line
0
150'
300'
GRAPHIC SCALE IN FEET

DRAFT

ARFF Alternatives Summary

Each alternative is summarized below.

- **Alternative 1** – reconstructs the ARFF facility in its current location.
- **Alternative 2** – relocates ARFF facility in the parcel east of the Fire Department Training Area.
- **Alternative 3** – relocates ARFF facility in the area north of the Fire Department Training Area.

ARFF Recommendation

The recommended ARFF alternative is to reconstruct the ARFF in its current location (Alternative 1).

AVIATION-RELATED DEVELOPMENT ALTERNATIVES

This section considers additional aviation-related development alternatives at PSP. Developable on-airport space is limited so both alternatives in this section focus on the off-airport parcel northeast of the airfield. Ultimately, the development of this parcel will be determined by business decisions. The two alternatives below explore how the parcel could be utilized rather than how it should be utilized.

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Aviation-Related Development Alternative 1

Alternative 1, depicted on **Figure 6-23**, shows a potential future air cargo facility, which includes an aircraft parking apron that allows for up to three narrowbody parking positions. The air cargo facility also includes space for a loading dock behind the building. This alternative also shows a potential future maintenance, repair, and overhaul MRO facility that can accommodate up to three narrowbody aircraft inside the hangar as well as three narrowbody aircraft on the apron in front of the hangar. Additionally, the alternative shows four large aviation-related business hangars. Each hangar could accommodate a large jet, provides enough apron space to park an aircraft in front of the hangar, and provides space for vehicle parking. The alternative preserves space for further aviation-related and potential future solar panel development. The alternative provides excellent landside access to and from Vista Chino and provides excellent airfield access to Taxiway C and both runways.

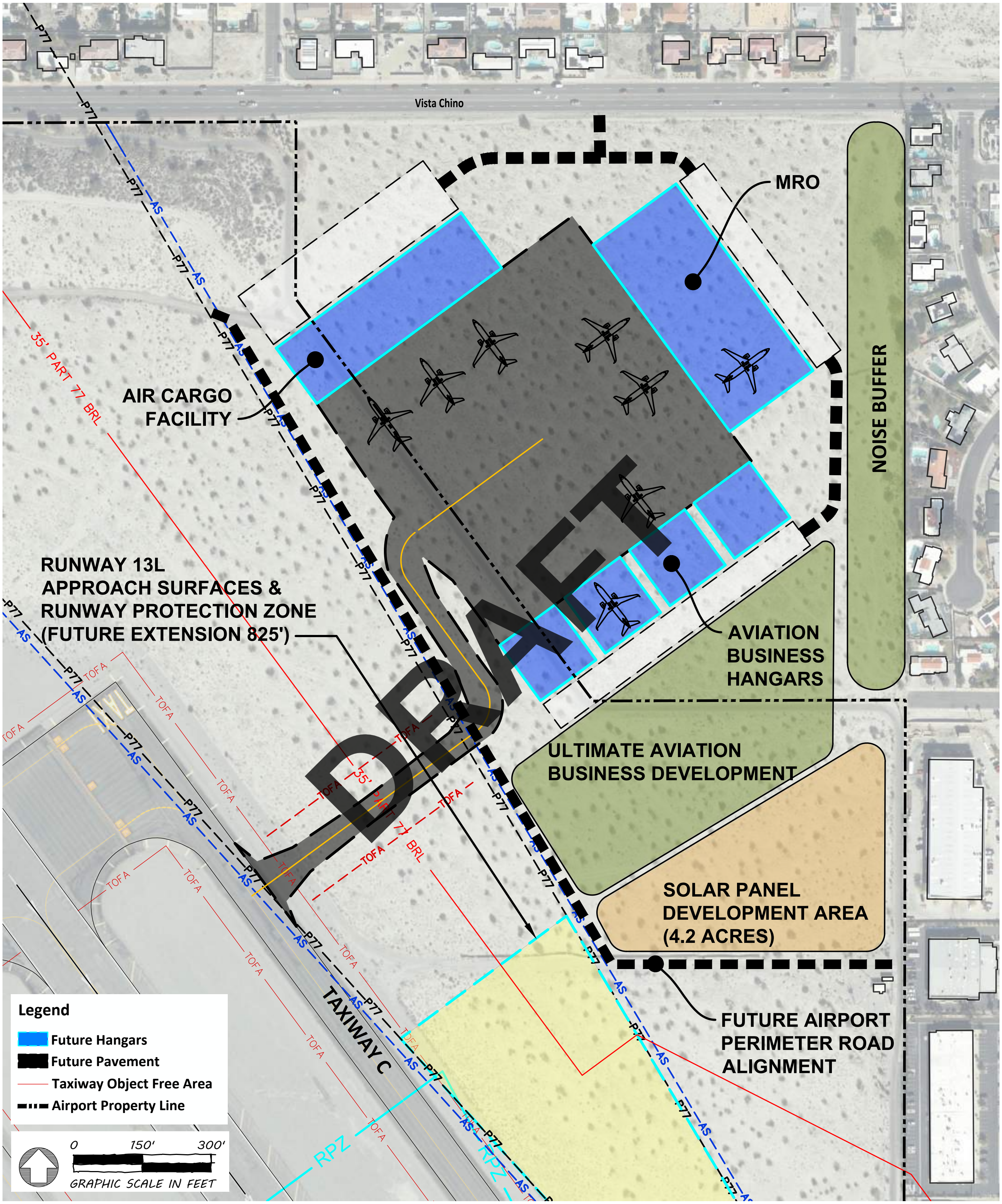
Potential Advantages of Alternative 1

- The alternative provides excellent airfield and landside access.
- Aircraft tails clear the Part 77 transitional surface and therefore can be parked on the apron in front of their facilities.
- Minimal aircraft taxi distance to both runways.
- The parcel is undeveloped; therefore, no demolition of existing facilities is required.

Potential Disadvantages of Alternative 1

- The alternative requires Tribal Land acquisition.
- The alternative requires development infrastructure including roads and utilities.

Figure 6-23: Aviation-Related Development Alternative 1


Vista Chino
MRO
NOISE BUFFER
AIR CARGO FACILITY
RUNWAY 13L APPROACH SURFACES & RUNWAY PROTECTION ZONE (FUTURE EXTENSION 825')
AVIATION BUSINESS HANGARS
ULTIMATE AVIATION BUSINESS DEVELOPMENT
SOLAR PANEL DEVELOPMENT AREA (4.2 ACRES)
FUTURE AIRPORT PERIMETER ROAD ALIGNMENT
TAXIWAY C
35' PART 77 BRL
TOFA
P77
AS
RPZ
DRAFT
Legend
Future Hangars
Future Pavement
Taxiway Object Free Area
Airport Property Line
0
150'
300'
GRAPHIC SCALE IN FEET

Aviation-Related Development Alternative 2

Alternative 2, depicted on **Figure 6-24**, shows a potential future air cargo facility that includes an aircraft parking apron that allows for four narrowbody parking positions. The air cargo facility includes a loading dock behind the building. This alternative also shows a potential MRO that can accommodate up to three narrowbody aircraft inside the hangar as well as three narrowbody aircraft on the apron in front of the hangar. Additionally, the alternative shows four large and three medium aviation-related business hangars. Each large hangar could potentially accommodate a large jet, provides enough apron space to park an aircraft in front of the hangar, and provides vehicle parking space for the tenants. Each medium hangar can accommodate up to a mid-size jet and provides vehicle parking space for the tenants. The alternative preserves space for future solar panel development. The alternative provides excellent landside access to and from Vista Chino and provides excellent airfield access to Taxiway C and both runways.

Potential Advantages of Alternative 2

- The alternative provides excellent airfield and landside access.
- Aircraft tails clear the Part 77 transitional surface and therefore can be parked on the apron in front of their facilities.
- The aircraft taxi distance is minimal to both runways.
- The parcel is undeveloped; therefore, no demolition of existing facilities is required.

Potential Disadvantages of Alternative 2

- This alternative requires Tribal Land acquisition.
- This alternative requires development infrastructure including roads and utilities.

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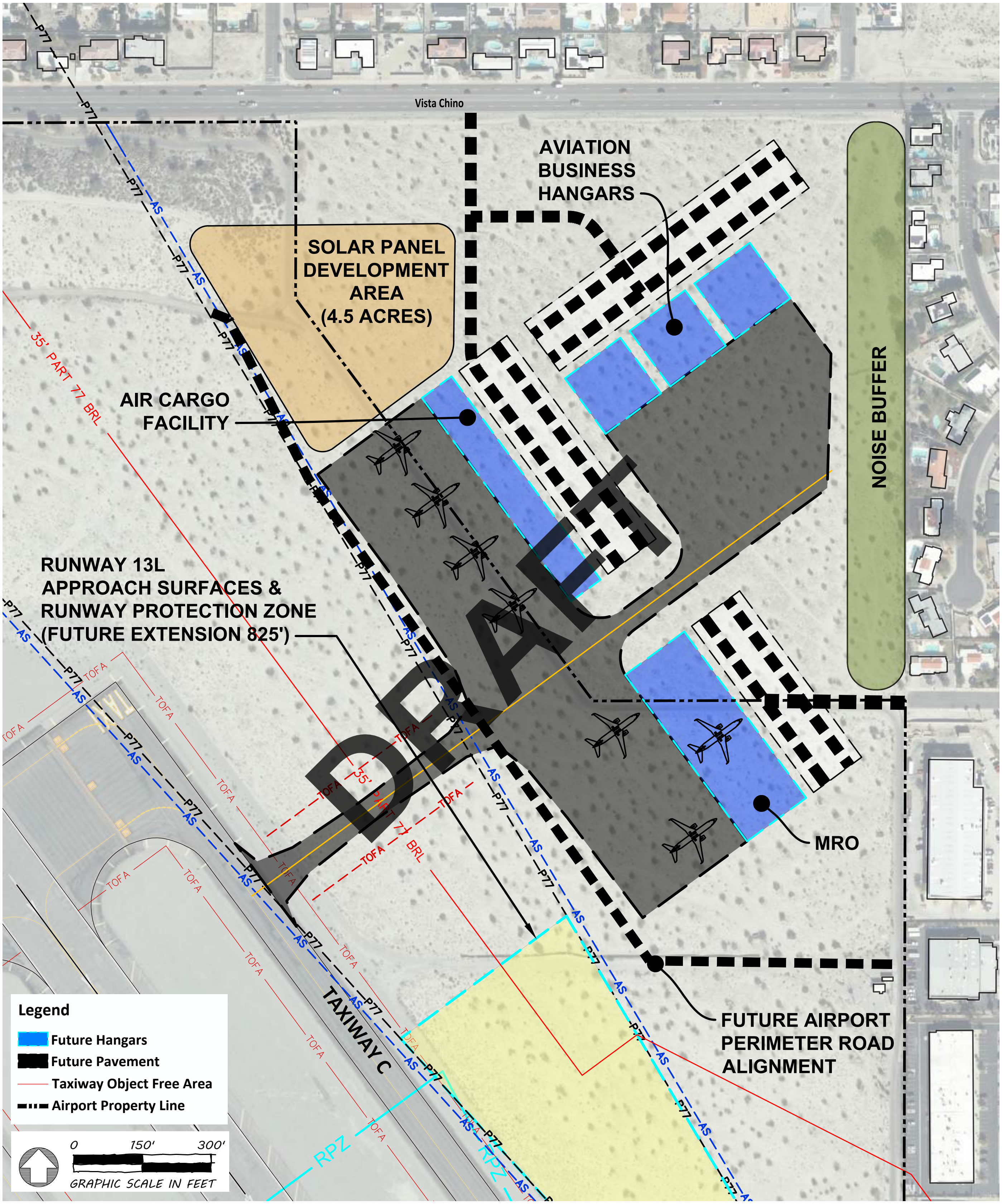
Figure 6-24: Aviation-Related Development Alternative 2


Vista Chino
AVIATION BUSINESS HANGARS
SOLAR PANEL DEVELOPMENT AREA (4.5 ACRES)
AIR CARGO FACILITY
NOISE BUFFER
35' PART 77 BRL
RUNWAY 13L APPROACH SURFACES & RUNWAY PROTECTION ZONE (FUTURE EXTENSION 825')
MRO
FUTURE AIRPORT PERIMETER ROAD ALIGNMENT
TAXIWAY C
TOFA
P77
AS
RPZ
DRAFT
Legend
Future Hangars
Future Pavement
Taxiway Object Free Area
Airport Property Line
0
150'
300'
GRAPHIC SCALE IN FEET

Aviation-Related Development Recommendation

Because developable on-airport space is limited, it is recommended to acquire and reserve the land northeast of the airfield for aviation-related development. The type of aviation development will come down to business decisions made by the Airport.

NOISE CONSIDERATIONS

The runway extension alternatives for Runway 13R/31L (the commercial service runway) and Runway 13L/31R (the general aviation runway) presented in previous sections of this chapter consider the potential relocation of runway thresholds both north and south of the Airport. For the commercial service runway, additional runway length is not needed within the 20-year planning period so commercial aircraft will arrive and depart at the exact same altitudes they do today and follow the same flight paths that they do today.

For the GA runway, the recommended alternative is an 825-foot extension to the north. This extension could potentially result in GA aircraft approaching PSP from the north at lower altitudes than they do today. This change in approach altitude could potentially increase noise over existing noise sensitive land uses north of the Airport. The Master Plan process includes a California Environmental Quality Act (CEQA) analysis that will develop noise contours and a land use compatibly assessment in accordance with FAA and California guidance on aircraft noise. While typical thresholds of significance are not expected to be exceeded with the GA runway extension, the CEQA analysis will confirm that assumption. Should the noise contour analysis show any potential for significant noise impacts, changes to the proposed extension will be considered or recommended.

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EQUITY AND SUSTAINABILITY CONSIDERATIONS

The primary goals of the airfield and landside alternatives are to meet FAA design standards, maintain a safe and efficient airfield system, align with tenant goals, and determine the best-use scenarios for PSP’s limited on-airport developable property. In support of these goals, equity and sustainability factors were incorporated into the planning and development of the airfield and landside alternatives. Using this sustainable development lens within the planning process allows the Airport to consider meeting the needs of today, while minimizing environmental and social impacts in the future.

The airfield and landside alternatives serve different purposes; therefore, equity and sustainability factors are separated in the following sections. A number of these factors will be considered in the CEQA analysis as part of this Comprehensive Airport Master Plan.

Airfield Considerations

Equity Factors

- **Community Engagement:** Continues to gather input from stakeholders including tenants and local communities to minimize potential negative impacts to these groups.
- **Employment Opportunities:** Considers how airfield development and construction can impact commercial or GA activity and potentially create local job opportunities.
- **Environmental Justice:** Assesses the potential for environmental impacts, such as noise, on surrounding communities, particularly in marginalized neighborhoods. Airfield development should aim to minimize or mitigate negative impacts to ensure that benefits of the projects are distributed equitably.

Sustainability Factors

- **Materials Selection:** Chooses sustainable and locally sourced materials whenever possible.
- **Waste Management:** Considers reuse or recycling of materials, whenever possible. For example, pavement proposed for removal in airfield alternatives can be recycled and re-used as sub-base for runway, taxiway, or apron expansions.
- **Lifecycle Assessment:** Considers the lifespan of airfield development projects. For example, to increase pavement longevity, airfield developments should consider the use of an environmentally friendly asphalt rejuvenator.

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Landside Considerations

Equity Factors

- **Accessibility for All:** Ensures any landside development is accessible to individuals of all abilities by incorporating ramps, elevators, wayfinding, and other features.
- **Inclusive Design:** Creates spaces that are inclusive of diverse backgrounds and abilities. Considers cultural sensitivities, age, gender, language, and race and can integrate local history in designs.
- **Community Engagement:** Involves local communities and stakeholders in the design process. Seek input from residents, businesses, stakeholders, and community organization that would be affected by the landside development to ensure their needs and concerns are addressed.
- **Employment Opportunities:** Considers how landside development and construction can create job opportunities for the local community, especially in marginalized neighborhoods. Collaborate with community organizations to provide training and employment initiatives.
- **Environmental Justice:** Assesses the potential for environmental impacts on surrounding communities, particularly those that are historically disadvantaged. Landside development should aim to minimize negative effects and maximize benefits for surrounding communities.

Sustainability Factors

- **Energy Efficiency:** Prioritizes energy-efficient design, utilizing advanced lighting, heating, cooling, and ventilation systems in applicable landside developments. Sensors and automation to optimize energy use should be implemented, if appropriate.
- **Renewable Energy:** Integrates renewable energy sources like solar panels to power landside development. Utilizes clean energy technologies to reduce reliance on fossil fuels.
- **Water Management:** Implements water-efficient fixtures and systems to minimize water consumption in applicable landside developments. Incorporates rainwater harvesting and greywater recycling to further conserve water resources, if appropriate.
- **Materials Selection:** Chooses sustainable and locally sourced materials whenever possible.
- **Waste Management:** Designs should include waste disposal and recycling facilities that encourage proper waste segregation. Promotes waste reduction through initiatives like composting and recycling program.
- **Transportation Alternatives:** Considers on-site electric vehicle charging stations, if appropriate. Considers access for local transit options and ease of pick up/drop off.
- **Biodiversity:** Incorporates desertscape and native vegetation into applicable landside developments to support local biodiversity. Use landscaping practices that require minimal water and maintenance.
- **Resilience to Climate Change**: Landside developments should be designed to withstand the impacts of climate change and extreme weather events. Consider materials selection and energy redundancy in the design of applicable landside developments.
- **Lifecycle Assessment:** Considers the entire lifecycle of landside development, from construction to operation and eventual decommissioning. Strives to minimize environmental impacts at every stage.
- **Certification of Standards:** Strives for sustainability certifications such as Leadership in Energy and Environmental Design (LEED) or Building Research Establishment Environmental Assessment Method (BREEAM), if applicable to the landside development.

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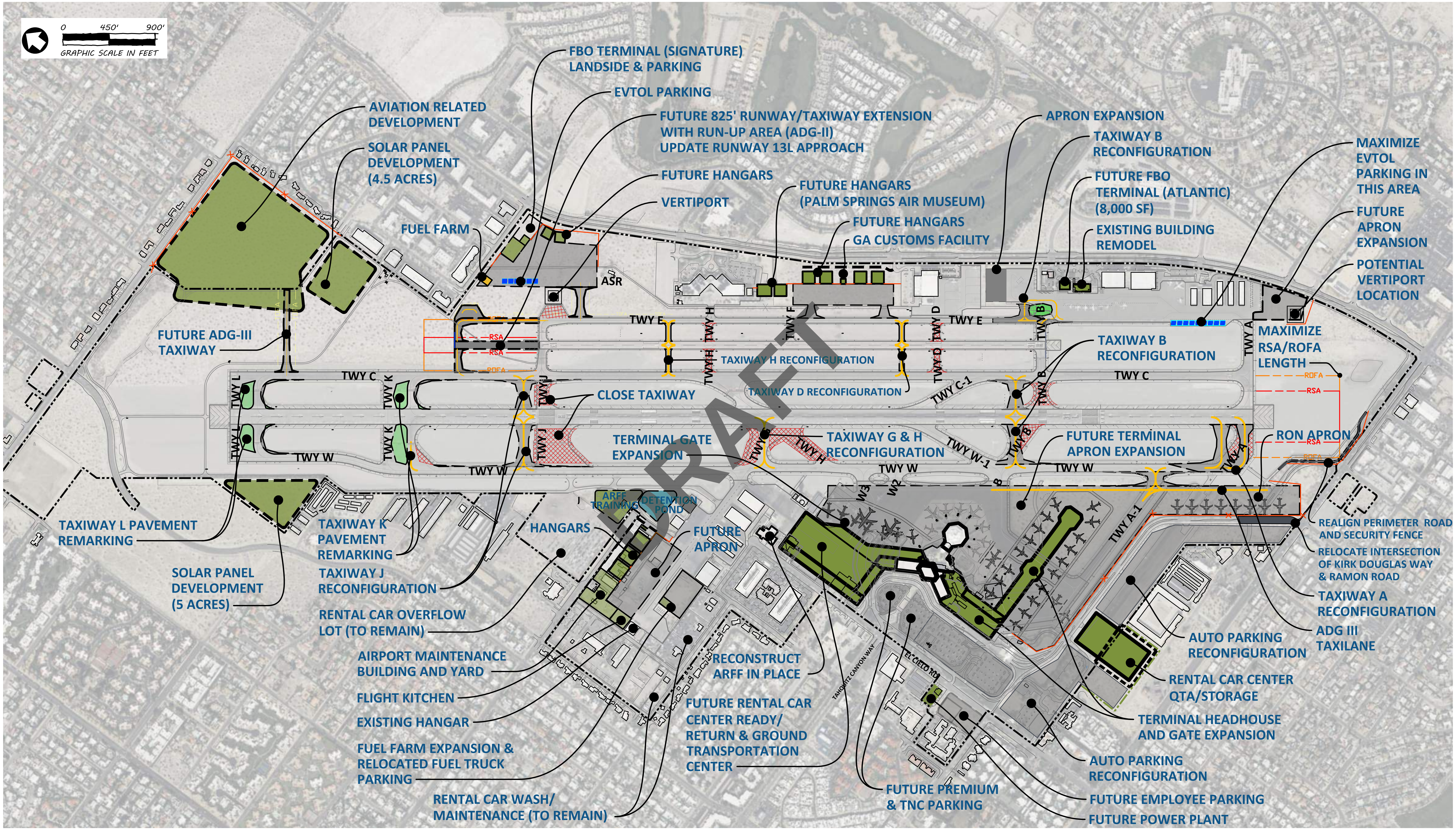
Sustainable development at PSP requires thoughtful consideration of the above-mentioned equity and sustainability factors. These holistic considerations pave the way to meet the needs of today while minimizing environmental impacts and ensuring that future needs can be met in a sustainable, equitable fashion.

AIRFIELD AND LANDSIDE ALTERNATIVES SUMMARY

This chapter explored alternatives and proposed recommendations for the airfield and landside facilities at PSP. All recommendations from this Master Plan are shown on **Figure 6-25**. The Facilities Implementation Plan organizes the Master Plan recommendations and projects in the Airport's Capital Improvement Program in a project list that provides rough planning level cost estimates. The Facilities Implementation Plan also provides phasing diagrams for the Master Plan projects.

Figure 6-25: Conceptual Development Plan


0 450' 900'
GRAPHIC SCALE IN FEET
FBO TERMINAL (SIGNATURE) LANDSIDE & PARKING
EVTOL PARKING
AVIATION RELATED DEVELOPMENT
FUTURE 825' RUNWAY/TAXIWAY EXTENSION WITH RUN-UP AREA (ADG-II) UPDATE RUNWAY 13L APPROACH
APRON EXPANSION
TAXIWAY B RECONFIGURATION
MAXIMIZE EVTOL PARKING IN THIS AREA
SOLAR PANEL DEVELOPMENT (4.5 ACRES)
FUTURE HANGARS
FUTURE HANGARS (PALM SPRINGS AIR MUSEUM)
FUTURE FBO TERMINAL (ATLANTIC) (8,000 SF)
VERTIPORT
FUTURE APRON EXPANSION
FUTURE HANGARS
GA CUSTOMS FACILITY
FUEL FARM
EXISTING BUILDING REMODEL
POTENTIAL VERTIPORT LOCATION
ASR
TWY E
TWY H
TWY F
TWY D
TWY E
TWY B
RSA
RSA
ROFA
FUTURE ADG-III TAXIWAY
TAXIWAY H RECONFIGURATION
TAXIWAY B RECONFIGURATION
TWY A
MAXIMIZE RSA/ROFA LENGTH
TWY C
TWY L
TWY K
TWY J
TWY H
TAXIWAY D RECONFIGURATION
TWY C-1
TWY B
TWY C
ROFA
RSA
CLOSE TAXIWAY
TWY L
TWY K
TWY J
TERMINAL GATE EXPANSION
TWY G
TWY H
TAXIWAY G & H RECONFIGURATION
TWY W-1
TWY B
FUTURE TERMINAL APRON EXPANSION
TWY A
RON APRON
RSA
ROFA
TWY W
TWY W
TWY W
TWY W
W3
W2
B
ARFF TRAINING
DETENTION POND
TWY A-1
TAXIWAY L PAVEMENT REMARKING
TAXIWAY K PAVEMENT REMARKING
HANGARS
FUTURE APRON
REALIGN PERIMETER ROAD AND SECURITY FENCE
RELOCATE INTERSECTION OF KIRK DOUGLAS WAY & RAMON ROAD
SOLAR PANEL DEVELOPMENT (5 ACRES)
TAXIWAY J RECONFIGURATION
TAXIWAY A RECONFIGURATION
RENTAL CAR OVERFLOW LOT (TO REMAIN)
ADG III TAXILANE
AUTO PARKING RECONFIGURATION
AIRPORT MAINTENANCE BUILDING AND YARD
RECONSTRUCT ARFF IN PLACE
TAHQUITZ CANYON WAY
EL CIELO RD
RENTAL CAR CENTER QTA/STORAGE
FLIGHT KITCHEN
FUTURE RENTAL CAR CENTER READY/ RETURN & GROUND TRANSPORTATION CENTER
TERMINAL HEADHOUSE AND GATE EXPANSION
EXISTING HANGAR
AUTO PARKING RECONFIGURATION
FUEL FARM EXPANSION & RELOCATED FUEL TRUCK PARKING
FUTURE PREMIUM & TNC PARKING
FUTURE EMPLOYEE PARKING
RENTAL CAR WASH/ MAINTENANCE (TO REMAIN)
FUTURE POWER PLANT

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Chapter 7 – Facilities Implementation Plan

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INTRODUCTION

The long-term development program or Capital Improvement Program (CIP) for Palm Springs International Airport (PSP or the Airport) is intended to establish a high-level strategy to fund airport improvements and maximize the potential to receive federal and state grant funds, while also establishing a financially prudent plan for improvement funding on a local level. From the Federal Aviation Administration's (FAA's) perspective, the CIP provides a detailed listing of projects and costs that is critical for their use in establishing priorities and budgeting expenditures at this airport when compared with the needs of other airports. From the local sponsor's perspective, the CIP identifies improvement needs and allows decisions to be made with a comprehensive understanding of potential financial implications.

The overall concept is to maximize the opportunities to receive federal and state grants, within the context of, and in recognition of, the amount of local funds that are available for capital needs. Although the CIP will be used for programming by the FAA, there is no financial commitment for the federal government or the sponsor to provide funding for the CIP. If federal matching funds are unavailable for a certain project during the specified time frame, the project will almost certainly be unaffordable using only local money, and the improvement project will not go forward until appropriate funding is available.

The potential improvements necessary to accommodate the future needs of PSP have been placed into three phases: Phase I (0-5 years), Phase II (6-10 years), and Phase III (11-20 years). Additionally, two projects are included as post-planning in the case the Airport grows at a rate quicker than anticipated. The suggested program for the phasing of these projects is provided in **Table 7-1** through **Table 7-4**. The proposed improvements are also illustrated graphically by time period on **Figure 7-1** through **Figure 7-3**.

Table 7-1: Phase I (0-5 Years) Development Program Project Costs

CIP Project Number	Figure Label	Projected Fiscal Year	Project Name	Project Description	Estimated Total Project Costs
1	-	2025	Taxiway W and Taxiway A1 Rehabilitation (Construct)	Safety improvements/enhancements	$14,000,000
2	-	2025	Construct Temporary FIS	Temporary FIS until FIS in CONRAC is constructed. Increase airfield capacity and passenger access.	$7,000,000
3	-	2025	Ground Transportation Center (GTC) design/renovation	Includes new badging/testing offices.	$1,000,000
4	-	2025	Shade installation – TNC & Taxi islands – design and install		$500,000
5	-	2025	Convert vacant terminal space into a lounge		$1,000,000
6	-	2025	Convert grass/turf areas to desert landscape Phase 1		$300,000
7	-	2025	Installation of new public announcement system in terminal and concourses	Replaces or improves aging infrastructure.	$250,000
8	-	2025	Terminal interior remodel/renovate/rehabilitation	Replaces or improves aging infrastructure.	$500,000
9	-	2025	Bono Elevator Replacements	Replaces or improves aging infrastructure.	$2,000,000
10	-	2025	Procure AWS screening equipment and any possible remodel/electrical		$500,000
11	-	2025	Replace both Bono escalators	Replaces or improves aging infrastructure.	$3,000,000
12	-	2025	Automated Exit Lane Design, Demo, and Installation		$1,500,000
13	-	2025	Solid Waste Separator and Hazmat Storage – Design and Construct		$500,000
14	-	2025	Microlight Upgrade	Replaces or improves aging infrastructure.	$200,000
15	-	2025	Hangar 18 Outfall Repair by GA Hangars	Replaces or improves aging infrastructure.	$500,000
16	-	2025	ARFF Station (Design)	Replaces or improves aging infrastructure.	$3,500,000
17	-	2025	Environment Assessment for RCC Phase 1	EA for RCC Phase 1	$500,000
18	-	2025	HVAC Infrastructure Replacement	Replaces or improves aging infrastructure (two boilers, three chillers and pumps).	$3,000,000
19	-	2025	Main Terminal Loop Road and Kirk Douglas Way Crack Seal and Sealcoat	Replaces or improves aging infrastructure.	$1,000,000
20	-	2025	WiFi outdoor	Innovation, technology, and customer experience	$300,000
21	-	2025	Environmental Assessment for Terminal Phase 1	EA for Terminal Phase 1	$500,000
22	-	2025	Main Terminal Wexler Façade Restoration	Historical preservation and rehabilitation	$1,500,000
23	-	2025	Airport Monument Signs Replacement	Replaces or improves aging infrastructure	$1,000,000
24	-	2026	Terminal Restroom Remodel – Construction – Phase 1 (Bono & Courtyard)	Replaces or improves aging infrastructure	$10,000,000
25	-	2026	Remain Overnight (RON) Parking (Design and Construct)	Increases airfield capacity and passenger access.	$10,000,000
26	-	2026	Baggage Claim Phase 1		$22,500,000
27	-	2026	Outbound Baggage Handling System and Terminal Expansion (Construct) Phase 1	Increase airfield capacity and passenger access.	$32,500,000
28	-	2026	Employee Parking Lot, Economy Lot, and Lot A (Construct)	Replaces or improves aging infrastructure.	$10,000,000
29	-	2026	Runway 13R/31L Rehabilitation and Taxiway A & Taxiway J	Safety improvements/enhancements	$3,000,000
30	-	2026	New Fire Alarm System – Main Terminal (minus ticketing), Bono Terminal, RJ Terminal	Safety improvements/enhancement and improves compliance with ADA	$500,000
31	-	2026	RCC Phase 1 (Design)	Design Phase 1 of the RCC.	$32,224,104
32	-	2026	Terminal Interior Remodel/Renovate/Rehabilitation	Replaces or improves aging infrastructure.	$500,000
33	-	2026	Perimeter Fence Rehabilitation/Security Enhancements – Phase 1	Replaces or improves aging infrastructure	$1,000,000
34	-	2026	Terminal Phase 1 (Design Only)	Design Phase 1 of the Terminal	$66,997,541
35	-	2026	Conver Airport Vehicles to Zero Emissions	Improves sustainability and energy efficiency.	$210,000

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CIP Project Number	Figure Label	Projected Fiscal Year	Project Name	Project Description	Estimated Total Project Costs
36	-	2026	Outbound Baggage Handling System and Terminal Expansion – Phase 2 (Construct)	Increase airfield capacity and passenger access.	$32,500,000
37	1	2027	Taxiway A Reconfiguration	Reconfigures Taxiway A to a 90-degree connection. Adds an additional connector as a bypass connector.	$30,000,000
	2	2027	Taxiway J Reconfiguration	Relocate Taxiway J to the north to eliminate existing hot spot. Demo existing pavement.	
38	-	2027	Airport Drainage Master Plan and/or project to address drainage		$5,000,000
39	-	2027	Parking Revenue System – Phase 2	Innovation, technology, and customer experience.	$500,000
40	-	2027	Terminal Restroom Remodel – Phase 2 (Construct)	Replaces or improves aging infrastructure in Wexler Terminal.	$5,000,000
41	-	2027	Perimeter Fence Rehabilitation/Security Enhancements – Phase 2	Replaces or improves aging infrastructure.	$1,000,000
42	-	2027	Terminal Interior Remodel/Renovate/Rehabilitation	Replaces or improves aging infrastructure.	$500,000
43	-	2027	Main Terminal Roof Rehabilitation (Design & Construct)	Replaces or improves aging infrastructure.	$500,000
44	-	2027	Rubber Removal/Paint Removal Equipment	Safety improvements/enhancements	$1,000,000
45	-	2027	Rehabilitate Taxilane G	Safety improvements/enhancements	$1,000,000
46	-	2027	Crack seal and Sealcoat Runway 13L/31R	Safety improvements/enhancements	$650,000
47	-	2027	Convert Airport Vehicles to Zero Emissions	Improves sustainability and energy efficiency	$210,000
48	3	2028	Signature Terminal and Apron Relocation	Relocate Signature's terminal and aircraft parking apron to 10-acre site on the east side of the airfield. Includes a new transient hangar and small fuel farm.	$58,937,500
49	4	2028	RCC – Phase 1 (Construct)	Construct Phase 1 of RCC.	$290,016,936
50	5	2028	Land Acquisition – 8-acre Parcel South of Airport Between Kirk Douglas Way and Ramon	Acquire land adjacent to Ramon Road. A potential site for RCC Phase 2.	$10,780,000
51	-	2028	Rehabilitate Commercial Aircraft Parking Apron Around Concourses	Full rehab of asphalt around concourses (approximately 657,000 square feet).	$22,000,000
52	-	2028	Main Terminal Loop Road and Kirk Douglas Way Rehabilitation	Replaces or improves aging infrastructure.	$3,000,000
53	-	2028	Bono Tent Roof Replacement	Replaces or improves aging infrastructure.	$2,000,000
54	-	2028	ASOS Replacement	Replaces or improves aging infrastructure.	$500,000
55	-	2028	Conference/Meeting Rooms	Innovation, technology, and customer experience	$100,000
56	-	2028	Terminal Interior Remodel/Renovate/Rehabilitation	Replaces or improves aging infrastructure.	$500,00
57	-	2028	Redesign VIP to expand ALT Control Center and Incorporate Landside Operations	Replaces or improves aging infrastructure.	$2,500,000
58	6	2028	Airport Maintenance Facility – Phase 1	Relocate airport maintenance yard to the corner of E Alejo Road and N Civic Drive. Maintain approximately same size (1.1 acres with 5,600 square foot building)	$5,000,000
59	7	2029	Terminal Expansion – Phase 1 (Construct)	Construct Phase 1 of Terminal expansion.	$364,873,194
60	-	2029	New Operations Control Center	Replaces or improves aging infrastructure.	$2,500,000
61	-	2029	ADA Improvements – Hearing, Sight, Sensory, Mobility Impaired	Safety improvements/enhancements and improves compliance with ADA	$750,000
62	-	2029	New 1,500 Gallon ARFF Apparatus	Replaces or improves aging infrastructure	$800,000
63	8	2029	Relocate Fuel Truck Parking	Relocate fuel trucks adjacent to fuel farm to improve circulation for new maintenance facility and flight kitchen.	$1,502,900
64	9	2029	Solar Panel Development – Phase 1	Improves sustainability and energy efficiency (approximately 5-acres)	$5,000,000
65	-	2029	Terminal Interior Remodel/Renovate/Rehabilitation	Replaces or improves aging infrastructure.	$500,000

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Source: *Mead & Hunt, 2024.*

Note: *Phase I: 2024-2029; Project costs in 2024 dollars.*

Table 7-2: Phase II (6-10 Years) Development Program Project Costs

CIP Project Number	Figure Label	Projected Fiscal Year	Project Name	Project Description	Estimated Total Project Costs
66	10	2030	ARFF Station (Construct)	Replaces or improves aging infrastructure. Requires temporary fire station. Assumes ARFF and City Firestation continue to be co-located.	$35,000,000
67	11	2030	Taxiway D, B, and H reconfigurations	Relocate Taxiways D & H connectors on Runway 13R/31L. Reconfigure Taxiway B to eliminate hot spot.	$4,410,300
68	-	2030	Rehabilitate Taxiway C and E	Safety improvements/enhancements	$20,000,000
69	-	2030	Crack Seal and Sealcoat Taxiway A1 and W	Safety improvements/enhancements	$1,000,000
70	-	2030	Inter-Modal Transportation Facility	Increase airfield capacity and passenger access	$50,000,000
71	12	2031	GA Customs Facilities	Construct new GA customs facility on east side of airfield between Palm Springs Air Museum and SkyWest Maintenance. Includes aircraft parking apron.	$10,314,100
72	-	2031	Demo Dilapidated Hangars/Buildings (3)	Replaces or improves aging infrastructure.	$8,000,000
73	13	2031	Fight Kitchen	New flight kitchen adjacent to Taxilane G. Approximately 14,500 square feet.	$12,333,800
74	-	2031	Covered Solar Public Parking	Improves sustainability and energy efficiency.	$5,000,000
75	-	2032	Crack Seal and Sealcoat Runway 13R/31L and Taxiways A & J Connectors	Safety improvements/enhancements	$2,000,000
76	-	2032	Convert Grass/Turf Areas to Desert Landscape – Phase 2		$300,000
77	-	2033	Alejo Lot Upgrades	Replaces or improves aging infrastructure.	$100,000
78	-	2033	Landside Wayfinding Improvements	Improves sustainability and energy efficiency.	$1,000,000
79	-	2034	Repave Lots "A" an through "D"	Replaces or improves aging infrastructure.	$3,000,000
80	14	2030-2034	Address ROFA to Meet Standards for Runway 13R/31L	Relocate existing service road and perimeter fence. Relocate Kirk Douglas Way intersection with Ramon Road.	$2,731,300
81	15	2030-2034	Airport Maintenance Facility – Phase 2	Relocate airport maintenance yard to corner of E Alejo Road and N Civic Drive. Maintain approximately same size (1.1-acres with 5,600 square foot building).	$5,000,000
82	16	2030-2034	Taxiways G and H Reconfigurations	Reconfigure Taxiway G and remove western portion of Taxiway H as it connects to Runway 13R/31L.	$4,890,200
83	17	2030-2034	Taxiways K and L Pavement Re-markings	Addresses non-standard taxiway condition (wide expanses of pavement). Islands to be painted on pavement.	$663,500
84	-	2030-2034	Runway 13L/31R Rehabilitation (Construct)	Safety improvements/enhancements.	$4,000,000
85	18	2030-2034	Vertiports and Electric Aircraft Parking Positions	Innovation, technology, and customer experience.	$125,800
86	19	2030-2034	Atlantic Aviation Apron Expansion – South Leasehold	Expansion of Atlantic Aviation's aircraft parking apron to the south within existing leasehold. Approximately 122,500 square feet.	$6,163,300
87	20	2030-2034	Land Acquisition Parcel Northeast of Airport	Acquire parcel for future aviation related development.	$17,000,000
88	21	2030-2034	Construct Taxiway for Future Aviation Related Development	Construct future ADG-III taxiway to connect Taxiway C to future aviation related development.	$2,484,600
89	22	2030-2034	Apron Expansion Adjacent to Taxilane G	Convert existing fuel truck parking to aircraft apron parking adjacent to Taxilane G (6.4 acres).	$32,060,200
90	23	2030-2034	Hangar Construction Adjacent to Relocated Signature FBO	Construct 2 100' x 100' Hangars adjacent to Relocated Signature FBO.	$16,171,900
91	24	2030-2034	Hangar Construction Adjacent to Taxilane G	Construct 3 150' x 150' Hangars adjacent to Taxilane G.	$50,312,500
92	25	2030-2034	Signature Fuel Farm Expansion	Expansion of fuel farm. Potential for SAF tanks (0.2 acres).	$8,152,500
93	26	2030-2034	Atlantic Aviation Apron Expansion – North Leasehold	Expansion of Atlantic Aviation's aircraft parking apron to the north within existing leasehold. Approximately 43,500 square feet.	$2,814,000
94	27	2030-2034	Atlantic Aviation Terminal Expansion & Building Remodel	New 8,000 square feet terminal and remodel existing building.	$7,130,000
95	28	2030-2034	Solar Panel Development – Phase 2	Improves sustainability and energy efficiency (4.5 acres).	$5,000,000

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Source: *Mead & Hunt, 2024.*

Note: *Phase II: 2030-2034; Project costs in 2024 dollars.*

Table 7-3: Phase III (11-20 Years) Development Program Project Costs

CIP Project Number	Figure Label	Projected Fiscal Year	Project Name	Project Description	Estimated Total Project Costs
96	29	2035-2044	Terminal Expansion – Phase 2 (Construct)		$1,1145,490,054
			Main Terminal Access Road Crosswalk Improvements	Replaces or improves aging infrastructure.	
			Vehicle Surface Parking	Adjustments to vehicle surface parking after roadway reconfiguration.	
			Headhouse & New Southern Concourse	The existing checked bag inspection system will remain in its current location.	
			Dual Group III Taxilane & Relocate RON Parking	Will be constructed on both sides of the pier.	
97	-	2035-2044	Environmental Assessment for RCC – Phase 2	EA for RCC Phase 2.	$500,000
98	-	2035-2044	RCC Design – Phase 2	Design Phase 2 of RCC.	$17,902,280
99	30	2035-2044	RCC Construct – Phase 2	Construct Phase 2 of RCC.	$161,120,520
100	31	2035-2044	Terminal Expansion – Phase 3 (Construct)	South pier expansion (extends to the east) and aircraft parking apron (will need to be on both sides of the pier; 27-29 narrowbody).	$93,188,731
101	32	2035-2044	East Side Hangars and Landside Access	Construct 2 150’ x 150’ hangars and 4 100’ x 100’ hangars on parcel between Palm Springs Air Museum & SkyWest Maintenance.	$66,843,800
102	33	2035-2044	East Side Hangars Apron	Construct aircraft parking apron between Palm Springs Air Museum and SkyWest Maintenance.	$13,476,600
103	34	2035-2044	Runway 13L/31R & Taxiway E Extension	Extend Runway 13L/31R 825 feet to the north. Add new entrance/exit connectors and new runup area.	$6,805,800
104		2035-2044	Taxiway Removal	Remove existing runup area.	$989,200
105	35	2035-2044	Airport Maintenance Facility – Phase 3	Relocate airport maintenance yard to corner of E Alejo Road and N Civic Drive. Maintain approximately same size (1.1 acres with 5,600 square foot building).	$5,000,000
106	-	2035-2044	Convert Grass/Turf Areas to Desert Landscape – Phase 3		$300,000
107	-	2035-2044	Crack Seal and Sealcoat Taxiways A1 & W	Safety improvements/enhancements.	$1,000,000
108	-	2035-2044	Crack Seal and Sealcoat Runway 13R/31L and Taxiway Connectors	Safety improvements/enhancements.	$3,000,000
109	-	2035-2044	Crack Seal and Sealcoat Runway 13L/31R and Taxiway Connectors	Safety improvements/enhancements.	$1,000,000

Source: *Mead & Hunt, 2024.*
Note: *Phase III: 2035-2044; Project costs in 2024 dollars.*

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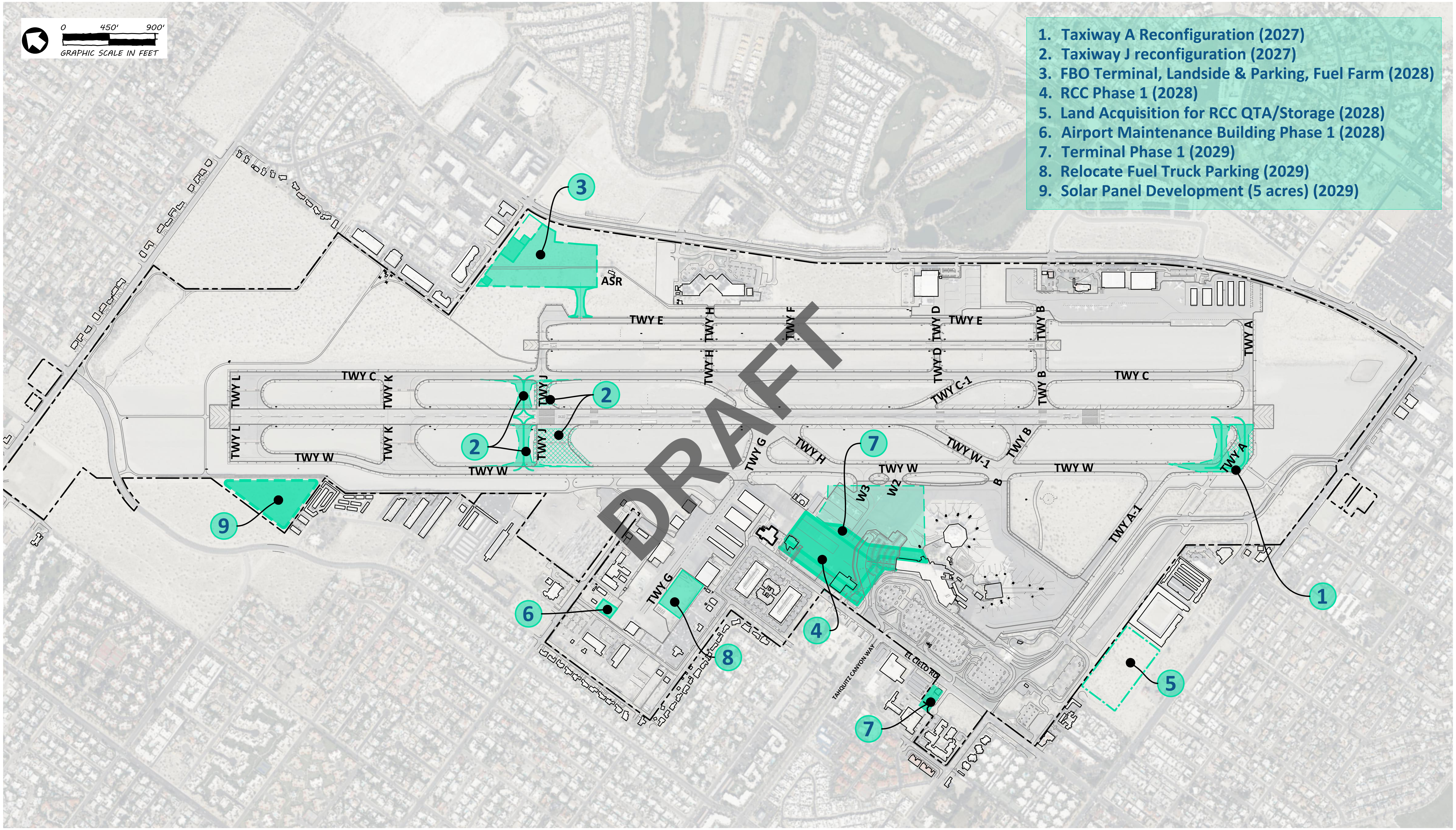
Table 7-4: Post-Planning Program Project Costs

CIP Project Number	Figure Label	Projected Fiscal Year	Project Name	Project Description	Estimated Total Project Costs
110	36	2045+	Terminal Expansion – Phase 4	South pier expansion (expands to the east), aircraft parking apron (will need to be on both sides of the pier; 32 -34 narrowbody)	$89,779,568
111	37	2045+	Aviation Related Development	Future aviation related development.	TBD

Source: *Mead & Hunt, 2024.*
Note: *Phase III: 2035-2044; Project costs in 2024 dollars.*

Figure 7-1: Phasing Plan - Near Term Projects (2025-2029)



1. Taxiway A Reconfiguration (2027)
2. Taxiway J reconfiguration (2027)
3. FBO Terminal, Landside & Parking, Fuel Farm (2028)
4. RCC Phase 1 (2028)
5. Land Acquisition for RCC QTA/Storage (2028)
6. Airport Maintenance Building Phase 1 (2028)
7. Terminal Phase 1 (2029)
8. Relocate Fuel Truck Parking (2029)
9. Solar Panel Development (5 acres) (2029)

0
450'
900'
GRAPHIC SCALE IN FEET
ASR
TWY E
TWY H
TWY F
TWY D
TWY B
TWY A
TWY C
TWY L
TWY K
TWY J
TWY C-1
TWY W
TWY G
TWY W-1
W3
W2
B
TWY A-1
TAHQUITZ CANYON WAY
EL CIELO RD
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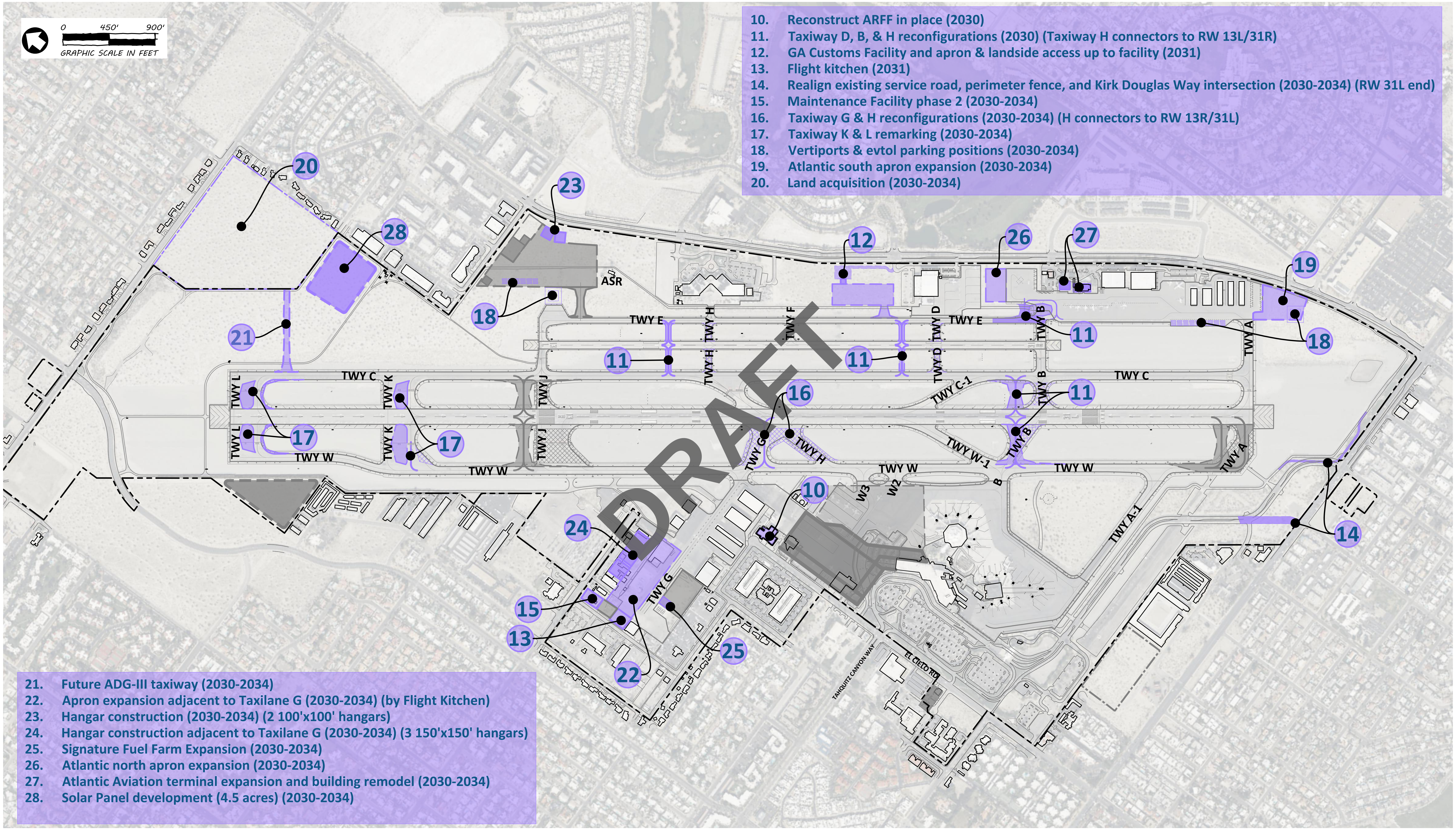
1
2
3
4
5
6
7
8
9

Figure 7-2: Phasing Plan - Mid Term Projects (2030-2034)


0
450'
900'
GRAPHIC SCALE IN FEET
20
23
28
12
26
27
19
18
21
11
16
17
10
24
15
13
22
25
14
ASR
TWY E
TWY H
TWY F
TWY D
TWY B
TWY A
TWY C
TWY L
TWY K
TWY J
TWY C-1
TWY G
TWY W
TWY W-1
B
W3
W2
TWY A-1
TAHQUITZ CANYON WAY
EL CIELO RD
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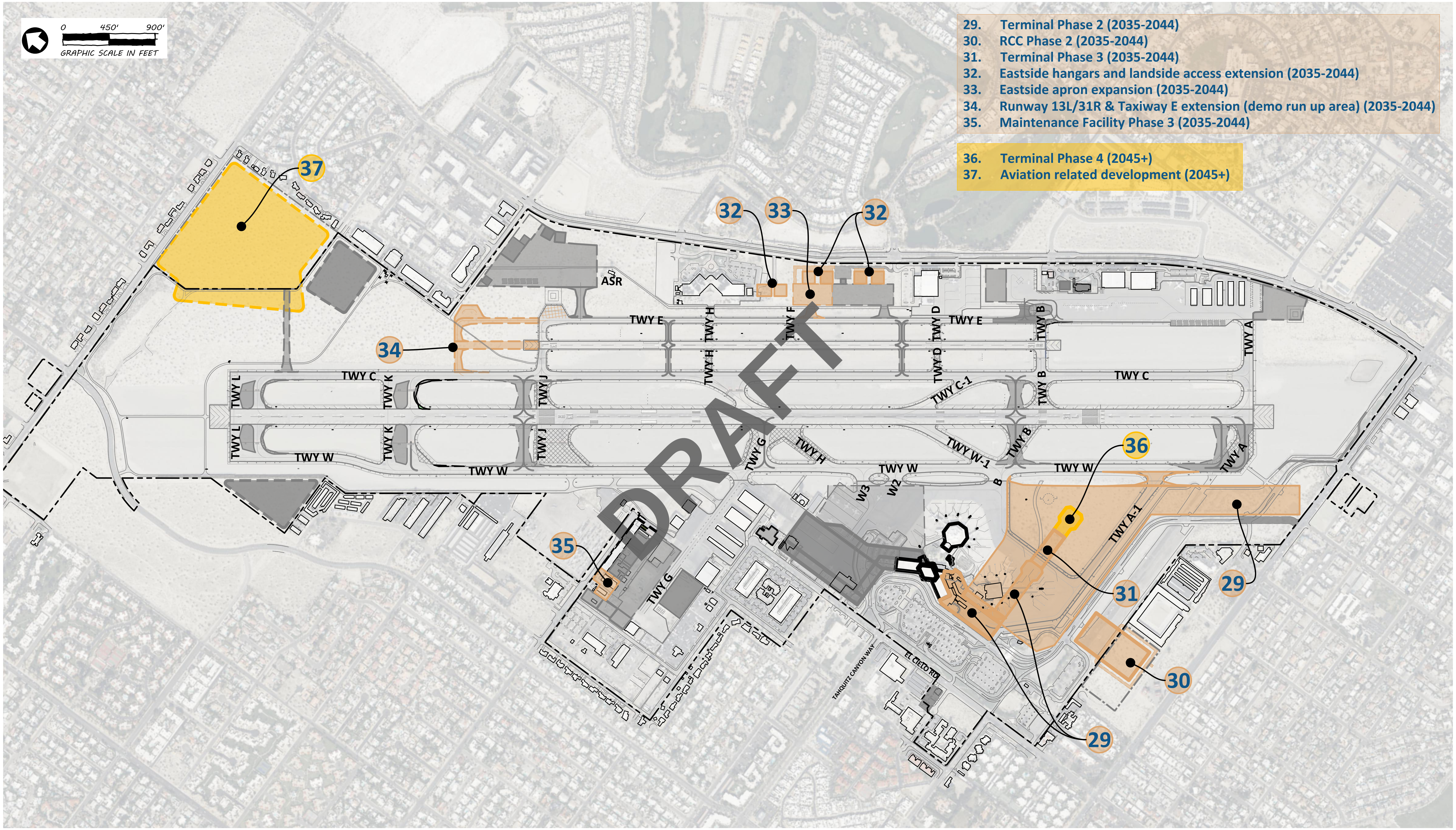
10. Reconstruct ARFF in place (2030)
11. Taxiway D, B, & H reconfigurations (2030) (Taxiway H connectors to RW 13L/31R)
12. GA Customs Facility and apron & landside access up to facility (2031)
13. Flight kitchen (2031)
14. Realign existing service road, perimeter fence, and Kirk Douglas Way intersection (2030-2034) (RW 31L end)
15. Maintenance Facility phase 2 (2030-2034)
16. Taxiway G & H reconfigurations (2030-2034) (H connectors to RW 13R/31L)
17. Taxiway K & L remarking (2030-2034)
18. Vertiports & evtol parking positions (2030-2034)
19. Atlantic south apron expansion (2030-2034)
20. Land acquisition (2030-2034)

21. Future ADG-III taxiway (2030-2034)
22. Apron expansion adjacent to Taxilane G (2030-2034) (by Flight Kitchen)
23. Hangar construction (2030-2034) (2 100'x100' hangars)
24. Hangar construction adjacent to Taxilane G (2030-2034) (3 150'x150' hangars)
25. Signature Fuel Farm Expansion (2030-2034)
26. Atlantic north apron expansion (2030-2034)
27. Atlantic Aviation terminal expansion and building remodel (2030-2034)
28. Solar Panel development (4.5 acres) (2030-2034)

Figure 7-3: Phasing Plan - Long Term Projects (2035-2044) and Post Planning



29. Terminal Phase 2 (2035-2044)
30. RCC Phase 2 (2035-2044)
31. Terminal Phase 3 (2035-2044)
32. Eastside hangars and landside access extension (2035-2044)
33. Eastside apron expansion (2035-2044)
34. Runway 13L/31R & Taxiway E extension (demo run up area) (2035-2044)
35. Maintenance Facility Phase 3 (2035-2044)

36. Terminal Phase 4 (2045+)
37. Aviation related development (2045+)

0
450'
900'
GRAPHIC SCALE IN FEET
37
32
33
32
34
35
36
31
29
30
29
ASR
TWY E
TWY H
TWY F
TWY D
TWY B
TWY A
TWY C
TWY L
TWY K
TWY J
TWY C-1
TWY W
TWY G
TWY W-1
W3
W2
B
TWY A-1
TAHQUITZ CANYON WAY
EL CIELO RD
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CAPTIAL IMPROVEMENT PROGRAM

To assist in preparation of the FAA's effort to provide grant funding to the most needed projects, airport management keeps a CIP, similar in format to the tables presented above, on file and up to date with the FAA. The purpose of the proposed project list, phasing, and costs is to provide a progressive projection of capital needs, which can then be utilized in local and federal financial programming. It is understood that, as soon as this long-range planning document is published, the project list starts to be out of date; therefore, it will always differ to some degree with the Airport's CIP on file with the FAA.

PHASING

To supplement the information provided by the project list and project cost estimates, a phasing illustration has been prepared. The phasing graphics presented above, indicate the suggested phasing for the proposed improvement projects throughout the 20-year planning period.

The plans represent a suggested schedule, but variance from it will almost certainly be necessary, especially during the latter time periods. Attention has been given to the first five years because the projects outlined in this time frame include many critical improvements. The demand for certain facilities, especially in the latter time frame, and the economic feasibility of their development are to be the prime factors influencing the timing of individual project construction. Care must be taken to provide for adequate lead time for detailed planning and construction of facilities in order to meet aviation demands. It is also important to minimize disruptive scheduling, where a portion of the facility may become inoperative due to construction, and to prevent extra costs resulting from improper project scheduling.

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SOURCES OF CAPITAL FUNDING

The development of the Master Plan CIP is anticipated to be funded from several sources. These sources include FAA Airport Improvement Program entitlement and discretionary grants, special purpose local option sales tax, rental car customer facility charges, state aviation grants, net operating cash flow/cash reserves and other funding (including revenue bonds). Each of these sources of funds is described in detail in the following chapter entitled **Financial Feasibility Analysis**.

SUMMARY

If aviation demands continue to indicate that improvements are needed, and if the proposed improvements prove to be environmentally acceptable, the capital improvement financial implications discussed previously and in the following chapter are likely to be acceptable for the FAA and the Airport Sponsor. However, it must be recognized that this is only a programming analysis and not a commitment on the part of the FAA or the Airport Sponsor. If the cost of an improvement project is not financially feasible, it will not be implemented.

Chapter 8 – Financial Feasibility Analysis

WELCOME TO PALM SPRINGS
RESTROOMS
EXIT
BAGGAGE CLAIM
NEWS

INTRODUCTION

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This chapter presents a financial analysis of the estimated costs of the capital improvements recommended in the Master Plan (MP) for Palm Springs International Airport (the Airport or PSP), as presented earlier in this document. This chapter describes the financial framework for the Airport, including the airline rates and charges methodology as specified in the Airport Use and Lease Agreement (AULA). It also includes an analysis of the Airport's historical revenues and expenses for Fiscal Years[1] (FYs) 2019 through 2023, and projections of revenues and expenses through FY2035. In addition, the recommended funding sources for the capital projects in the MP are presented. The financial projections reflect the anticipated effects of funding the MP Capital Improvement Program (CIP). The funding plan anticipates the use of Federal Aviation Administration (FAA) Airport Improvement Program (AIP) grants; Passenger Facility Charges (PFCs); Bipartisan Infrastructure Law (BIL) grants; Department of Transportation (DOT) Transportation Infrastructure Finance and Innovation Act (TIFIA) funds; Customer Facility Charges (CFCs), Airport funds, and bonds. The financial analysis uses the FAA-approved air traffic forecast contained in the **Aviation Activity Forecast** chapter as a basis for the financial projections presented in this chapter.

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[1] The Airport's fiscal year is comprised of the 12 months ending on June 30th. Except where otherwise indicated, all information is presented in terms of the Airport's fiscal year.

AIRPORT FINANCIAL FRAMEWORK

The Airport is owned and operated by the City of Palm Springs, California (City). The Airport is a city enterprise fund that operates in accordance with generally accepted accounting principles (GAAP). Financial statements for the Airport are prepared each fiscal year based on GAAP and audited by independent certified public accountants. The Airport also maintains internal financial records, which contain more detailed itemization of revenues and expenses, including details by cost center.

The financial projections reflect key provisions of, and terms defined in, the Indenture of Trust dated July 1, 2019 (Indenture). The Indenture establishes priorities for the application of Revenues (as defined by the Indenture) to various funds and accounts, which are first deposited into the Revenue Fund and then flow to other funds and accounts to pay O&M (Operation and Maintenance) expenses and bond debt service, among other items. The Airport's outstanding bonds were issued pursuant to the Indenture, and this financial analysis assumes that all future bonds will also be issued pursuant to the Indenture. Specific terms from the Indenture used in this chapter are capitalized.

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PROPOSED CAPITAL PROGRAM

The recommended capital improvements necessary to accommodate the future needs of PSP are presented in the **Facilities Implementation Plan**. The recommended capital projects are presented in the following phases: Short Term (2025 to 2029), Mid Term (2030 to 2034), Long Term (2035 to 2045), and Beyond (2045+). **Table 8-1** summarizes the estimated project costs for the MP CIP.

As shown in **Table 8-1**, the total estimated project costs for the MP CIP is $3.0 billion in 2024 dollars, or $3.7 billion in year of expenditure (YOE) dollars.

Table 8-1: Master Plan Capital Improvement Program Project Costs

Time Period	Total Project Costs (2024 dollars)	Total Project Costs (year of expenditure)
Near-Term	$1,082,602,175	$1,185,272,178
Mid-Term	$317,157,900	$367,211,062
Long-Term	$1,516,616,985	$1,968,681,402
Beyond Planning Period	$89,779,568	$147,732,688
Total	**$3,006,156,628**	**$3,668,897,331**

Sources: *PSP International Airport; Mead & Hunt; Unison Consulting; Compiled by Unison Consulting.*

PROPOSED FUNDING PLAN

The recommended funding plan includes the following sources:

- FAA AIP Grants (Entitlement and Discretionary)
- PFCs
- BIL Grants: Airport Infrastructure Grants (AIG) and Airport Terminal Program (ATP) Grants
- DOT TIFIA Funds
- General Airport Revenue Bonds (GARBs)
- CFCs
- Airport Funds

FAA Airport Improvement Program Grants

FAA AIP grants are administered to develop and maintain infrastructure projects that increase the capacity, safety, and security at airports across the United States. The FAA issues either entitlement (passenger or cargo) or discretionary grants for projects. AIP passenger entitlement grants are awarded using an enplanement-based formula. The FAA awards AIP discretionary grants based on established funding priorities and the allocation of discretionary funds among nine FAA regions. The distribution of the funds to the FAA regions is based on considerations including the number and types of airports in each region, and the identified capital needs of those airports. This analysis assumes that the FAA AIP grant program will continue throughout the projection period.

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Table 8-2 presents the projections for AIP passenger entitlement funds for PSP, using the current enplanement-based formula, which is assumed to be in place for the entire forecast period. AIP entitlement funding amounts are based on passenger traffic forecasts. Some projects, in particular terminal development, are only partially eligible for AIP funding. For those projects, the entitlement funding amounts reflect the percentage of eligibility typical for such projects, based on the team's airport funding experience. The maximum funding eligibility for airports such as PSP, a small hub as defined by the FAA, is 90 percent.

Demand for AIP discretionary grant funding consistently exceeds funding availability. AIP discretionary grant funding amounts are based on an evaluation of amounts that can be reasonably expected to be made available to the Airport considering historic AIP discretionary grant funding provided to the Airport, the timing of projects identified for AIP discretionary grant funding, and the level of AIP discretionary grant funding support provided to similar projects at comparable airports.

The funding plan assumes a total of $101.2 million in AIP passenger entitlement grant funding and $127.4 million in AIP discretionary grants for MP projects.

Table 8-2: Projected Airport Improvement Program Entitlements

	Budget	Projected											Total	
	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033			2036-2040	2041-2045
Enplanements*	1,500,618	1,637,286	1,686,142	1,756,186	1,826,941	1,891,025	1,956,235	2,016,796	2,073,371	2,129,597	2,188,101	2,251,372	12,267,171	14,021,052
$15.60 for first 50,000 PAX	$780,000												$5,460,000	$3,900,000
$10.40 for next 50,000 PAX	$520,000												$3,640,000	$2,600,000
$5.20 for next 400,000 PAX	$2,080,000												$14,560,000	$10,400,000
$1.30 for next 500,000 PAX	$650,000												$4,550,000	$3,250,000
$1.00 for each over 1 million	$500,618	$637,286	$686,142	$756,186	$826,941	$891,025	$956,235	$1,016,796	$1,073,371	$1,129,597	$1,188,101	$1,251,372	$8,798,437	$9,021,052
Total AIP Entitlements	**$4,530,618**	**$4,667,286**	**$4,716,142**	**$4,786,186**	**$4,856,941**	**$4,921,025**	**$4,986,235**	**$5,046,796**	**$5,103,371**	**$5,159,597**	**$5,218,101**	**$5,281,372**	**$37,008,437**	**$29,171,052**

Sources: *PSP International Airport; Mead & Hunt; FAA.gov; Unison Consulting, Compiled by Unison Consulting.*

Note: ** Based on enplanements from two years prior. For example, 2023 AIP Entitlements are based on the 2021 enplanements.*

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Bipartisan Infrastructure Law Grants

The Bipartisan Infrastructure Law (BIL) is an investment in America's transportation network, which was signed into law in November 2021. The law provides for a $25 billion investment to modernize airport infrastructure, spread equally over five years (federal fiscal years (FFY) 2022 through 2026). The FAA plans to invest $15 billion in airport infrastructure to increase safety and expand capacity, $5 billion to improve aging terminal facilities, and $5 billion to improve air traffic facilities. The BIL grants will be used for terminal renovation projects, terminal enabling projects, terminal roadways projects, and the central heating and refrigeration plant project.

BIL-Airport Infrastructure Grant (AIG)

The $15 billion in airport infrastructure grants are allocated to airports using a two-step process. First, grants are allocated based on the same formula used for determining the allocation of FAA AIP entitlement grants. Second, any remaining balance is allocated based on each commercial airport's share of total U.S. enplanements. As enplanements grow from year-to-year, the amount of funds allocated based on the FAA AIP entitlement grant formula will increase, reducing the remaining balance to be allocated. Therefore, the funding plan assumes that the BIL grant amount allocated to the Airport by the FAA in FFY 2022 will remain unchanged over the life of the BIL program.

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BIL-Airport Terminal Program (ATP)

The $5 billion in ATP grants to improve aging terminal facilities is a competitive or discretionary program. However, no more than 20 percent of the total ($1 billion) can be awarded to small-hub airports; the Airport demand for competitive BIL grant funds is expected to exceed funding availability. ATP grant amounts are based on an evaluation of funds that can be reasonably expected to be made available to the Airport. The team assumed the allocation of BIL awards would follow similar patterns as the allocation of FAA AIP discretionary grants when developing the funding plan.

As with AIP funding, some terminal projects are only partially eligible for BIL funding. For those projects, the BIL funding amounts also reflect the eligibility percentage typical for such projects, based on the team's airport funding experience. The funding plan assumes approximately $40.2 million in total BIL grants for eligible MP project costs. The funding plan assumes approximately $29.1 million of the BIL grants will be ATP grants and $11.1 million will be AIG grants.

Passenger Facility Charges

PFCs are user fees imposed by an airport, collected for each enplaned passenger, and used for specific projects approved by the FAA. According to federal regulations, PFC projects must (1) preserve or enhance safety, security, or capacity of the national air transportation system; (2) reduce noise or mitigate noise impacts resulting from an airport; or (3) furnish opportunities for enhanced competition between or among air carriers. PSP is currently authorized by the FAA to collect a PFC of $4.50 per enplaned passenger.

Since the inception of the PFC program, PSP has received approval to collect and use a total of approximately $140.3 million in PFCs. PSP's most recent application was approved by the FAA on January 1, 2022. In FY2020, PSP issued approximately $22.3 million in PFC revenue bonds to finance a portion of the design, acquisition, and construction of ticketing hall and baggage handling system.

Table 8-3 shows the projected PFC collections during the planning horizon, based on the forecasts of passenger traffic presented in Chapter _ of the MP. Also shown are the projected uses of PFCs, which include the using PFCs on a pay-as-you-go basis for eligible costs of the MP CIP, outstanding General Airport Revenue Bond (GARB) debt service, and for future GARB debt service. It is assumed that PSP will submit several PFC applications to obtain approval to use PFCs for eligible costs, as needed during the planning horizon. As with AIP and BIL funding, some terminal projects are only partially eligible for PFC funding. For those projects, the PFC-eligible project costs reflect the percentage of eligibility typical for such projects.

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The amount of PFCs available for the MP CIP funding is somewhat constrained by PFCs pledged to pay debt service on outstanding bonds through FY2031. Through FY2031, the annual debt service on the outstanding bonds for which PFCs are pledged averages 35.6 percent of projected annual PFCs in those years.

In developing the projections of PFCs to be used in the funding plan, the analysis considered the timing of PFC-eligible project costs, to optimize the amount of pay-as-you-go PFCs and to maximize the effect of leveraging PFCs in pledging them for GARB debt service. The MP CIP funding plan includes $22.6 million in PFCs on a pay-as-you go basis, with a large portion of the remaining PFCs collected during the projection period being used to fund GARB debt service. The strategy assumed for PFCs to be pledged to the payment of GARB debt service is described in the sub-section discussing GARB funding, below.

Table 8-3: Projected PFC Cash Flow

	Budget	Projected											Total	
	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036-2040	2041-2045
Enplanements	1,686,142	1,756,186	1,826,941	1,891,025	1,956,235	2,016,796	2,073,371	2,129,597	2,188,101	2,251,372	2,317,763	2,385,030	12,955,103	14,766,443
Ineligible Enplanements (17%)*	(282,442)	(294,175)	(306,027)	(316,762)	(327,685)	(337,829)	(347,306)	(356,724)	(366,524)	(377,123)	(388,244)	(399,511)	(2,170,083)	(2,473,497)
PFC Eligible Enplanements	**1,403,699**	**1,462,011**	**1,520,914**	**1,574,263**	**1,628,550**	**1,678,966**	**1,726,065**	**1,772,873**	**1,821,577**	**1,874,250**	**1,929,519**	**1,985,518**	**10,785,020**	**12,292,946**
PFC Fund Beginning Balance	$10,376,020	$14,067,893	$5,143,987	$5,663,649	$6,422,099	$7,418,566	$6,219,657	$5,222,184	$4,425,886	$6,340,354	$8,375,347	$10,773,819	$12,160,643	$16,460,820
PFC Revenue ($4.39)	6,162,240	6,418,227	6,676,811	6,911,015	7,149,336	7,370,663	7,577,426	7,782,911	7,996,721	8,227,956	8,470,588	8,716,425	47,346,238	53,966,034
Interest Received (0.3%)	26,633	36,109	13,203	14,537	16,484	19,042	15,964	13,404	11,360	16,274	21,498	27,654	31,214	42,251
PFC Paygo Applied to Projects	-	(12,880,742)	-	-	-	-	-	-	-	(115,624)	-	(9,602,818)	-	-
PFCs pledged to Revenue Bond debt service:														
Currently outstanding Bonds	(2,497,000)	(2,497,500)	(2,498,750)	(2,495,500)	(2,497,750)	(2,495,000)	(2,497,250)	(2,499,000)	-	-	-	-	-	-
Series 2026 - GARB	-	-	(3,671,603)										(18,358,016)	
Series 2027 – GARB (portion of debt service)	-	-	-	-	-	(2,422,010)							(12,110,051)	
Series 2035 – GARB (portion of debt service)	-	-	-	-	-	-	-	-	-	-	-	-	(19,122,171)	
Total Debt Service	**($2,497,000)**	**($2,497,500)**	**($6,170,353)**	**($6,167,103)**	**($6,169,353)**	**($8,588,613)**	**($8,590,863)**	**($8,592,613)**	**($6,093,613)**	**($6,093,613)**	**($6,093,613)**	**($6,093,613)**	**($49,590,238)**	
PFC Fund Ending Balance	**$14,067,893**	**$5,143,987**	**$5,663,649**	**$6,422,099**	**$7,418,566**	**$6,219,657**	**$5,222,184**	**$4,425,886**	**$6,340,354**	**$8,375,347**	**$10,773,819**	**$3,821,467**	**$12,036,516**	**$20,950,300**

Sources: *PSP International Airport, Unison Consulting, Compiled by Unison Consulting*

Note: ** Ineligible enplanements refer to a passenger boarding that does not qualify for a PFC. The most common example is passengers that have 3 or more legs of a flight are not required to pay a PFC after the 2nd leg.*

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DOT Transportation Infrastructure Finance and Innovation Act (TIFIA)

The TIFIA program provides credit assistance for transportation infrastructure of regional and national significance. Eligible applicants include state and local governments, transit agencies, railroad companies, special authorities, special districts, and private entities. The TIFIA program provides support through direct loans; loan guarantees; and standby lines of credit. TIFIA interest rates are equivalent to Treasury rates, which are often lower than what can be achieved in the private market. Airport projects can be considered for assistance under this program. Eligibility requirements include but are not limited to the following:

- Included in the applicable State Transportation Improvement Program
- Capital cost of at least $50 million
- Credit assistance is limited to a maximum of 33 percent of the total eligible project costs[2]
- Senior debt must be rated investment grade
- Project also must be supported in whole or in part from user charges or other non-Federal dedicated funding sources
- Construction contracting process can commence no more than 90 days from execution of a TIFIA credit instrument
- Foster partnerships that attract public and private investment for the project

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The funding plan assumes three series of TIFIA financing to support eligible projects. The funding plan assumes TIFIA loans will be used for terminal construction projects, up to 33% of the total cost. The estimated debt service associated for the Series 2029, Series 2035, and Series 2045 is approximately $9.0 million, $35.0 million, and $3.2 million per year, respectively. Further detail regarding Airport debt service by series is depicted in **Table 8-4**. The TIFIA financing assumes a 30-year term, a 4.4 percent annual interest rate, a 1.5 percent cost of issuance, and a one-year capitalized interest period.

General Airport Revenue Bonds

GARBs are debt instruments secured by the Airport's Revenues. As previously discussed, PFCs can be used to pay debt service for PFC eligible portions of project costs.

Currently, PSP has 1 outstanding GARB issue. However, as discussed above, the debt service is paid for with PFC funds. The funding plan assumes six future GARB issuances (excludes TIFIA loans). **Figure 8-1** depicts total annual debt service compared to the amount of annual debt service for which Pledged PFCs are used.

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[2] Projects that meet certain rural, transit or transit-oriented development eligibility or is part of the Rural/INFRA/Mega grant Extra programs that provide a compelling justification can be eligible for up to 49 percent.

The bullets below summarize the GARB issuances required for the MP CIP.

- For one of the series of future GARBs (Series 2026), it is assumed that a portion of future annual PFC revenues will be pledged to pay all of the debt service throughout the life of the bonds. The estimated debt service is $3.7 million per year.
- For two of the series of future GARBs (Series 2027 and Series 2035), it is assumed that a portion of future annual PFC revenues will be pledged to pay a portion of the debt service throughout the life of the bonds. The estimated debt service is $3.7 million per year for the Series 2027 and $76.5 million per year for Series 2035. PFCs will be used to pay $2.4 million (Series 2027) and $3.8 million (Series 2035) of the debt service.
- For the other three series of future GARBs, it is assumed that all debt service will be paid from Airport revenues other than PFC revenues.
- The GARB financing assumes a 30-year term, a 5.5 percent annual interest rate, and a 1.5 percent cost of issuance. A one-year period of capitalized interest is anticipated for Series 2029, Series 2035, and Series 2045. A two-year period of capitalized interest is anticipated for Series 2027 and Series 2030. No capitalized interest is assumed for Series 2026 as PFC revenues are assumed to be pledged for all of the debt service.

The projected debt service by series, depicted in **Table 8-4**, is projected to increase from $2.5 million FY2024 to $39.0 million in FY2030. Projected debt service continues to increase to an annual average of $45.9 million between FY2031 and FY2035, $159.0 million between FY2036 and FY2045, and $167.1 million between FY2046 and FY2050. PFCs used to fund debt service increase from $2.5 million in FY2024 to an annual average of $6.7 million between FY2025 and FY2031. The amount of PFCs used to pay debt service decreases to $6.1 million between FY2032 and 2035 before reaching $9.9 million in FY2026 and remaining stable through the forecast period. In addition to PFCs, airport capital will be used to fund debt service. Surplus Airport net revenues will be used beginning in FY2036 with an average of $23.6 million used to fund debt service annually through FY2050.

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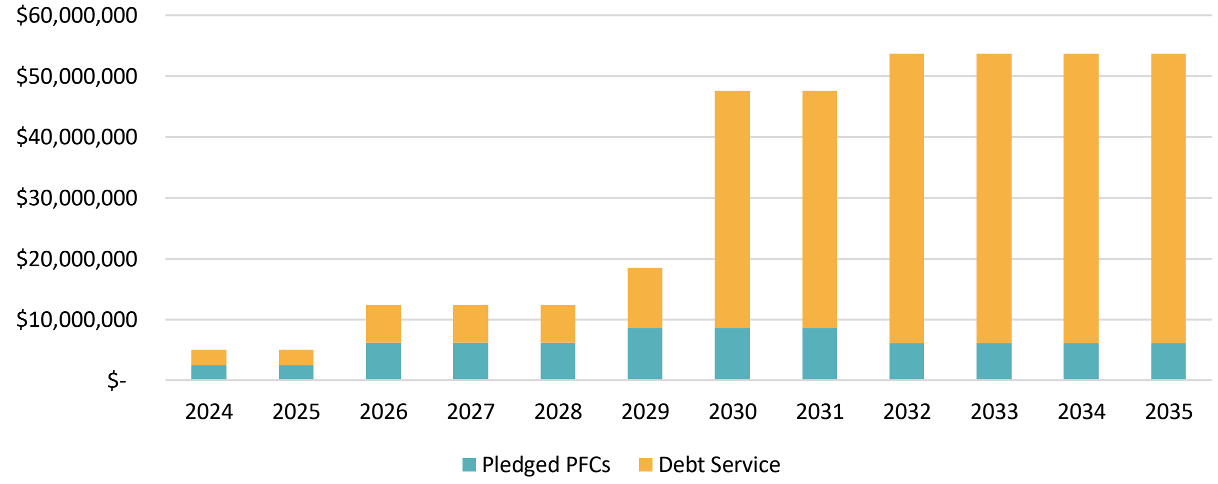
Figure 8-1: Total Debt Service and Total PFCs Pledged to Debt Service



Sources: *PSP International Airport, Unison Consulting, Compiled by Unison Consulting.*

Table 8-4: Projected Airport Debt Service

	Budget	Projected											Total	
	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036-2040	2041-2045
Total Outstanding Debt Service	**$2,497,000**	**$2,497,500**	**$2,498,750**	**$2,495,500**	**$2,497,750**	**$2,495,000**	**$2,497,250**	**$2,499,000**	**-**	**-**	**-**	**-**	**-**	**-**
Assumed Future series:														
Series 2026 - GARB	-	-	$3,671,603										$18,358,016	
Series 2027 - GARB	-	-	-	-	-	$3,726,170							$18,630,848	
Series 2029 - GARB	-	-	-	-	-	-	$20,100,386						$100,501,932	
Series 2029 - TIFIA	-	-	-	-	-	-	$8,996,668						$44,983,339	
Series 2030 - GARB	-	-	-	-	-	-	-	-	$11,115,991				$55,579,956	
Series 2035 - GARB	-	-	-	-	-	-	-	-	-	-	-	-	$382,443,418	
Series 2035 - TIFIA	-	-	-	-	-	-	-	-	-	-	-	-	$174,858,879	
Series 2045 - GARB	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Series 2045 - TIFIA	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Debt Service	**$2,497,000**	**$2,497,500**	**$6,170,353**	**$6,167,103**	**$6,169,353**	**$9,892,773**	**$38,992,077**	**$38,993,827**	**$47,610,818**	**$47,610,818**	**$47,610,818**	**$47,610,818**	**$795,356,386**	
Less Pledged PFC:														
Outstanding Bonds	$2,497,000	$2,497,500	$2,498,750	$2,495,500	$2,497,750	$2,495,000	$2,497,250	$2,499,000	-	-	-	-	-	-
Future Bonds	-	-	$3,671,603	$3,671,603	$3,671,603	$6,093,613	$6,093,613	$6,093,613	$6,093,613	$6,093,613	$6,093,613	$6,093,613	$49,590,238	
Total Pledged PFCs	$2,497,000	$2,497,500	$6,170,353	$6,167,103	$6,169,353	$8,588,613	$8,590,863	$8,592,613	$6,093,613	$6,093,613	$6,093,613	$6,093,613	$49,590,238	
Less Pledged CFC:														
Outstanding Bonds	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Future Bonds	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Pledged CFCs	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Less Airport Funds Applied to Debt Service:														
Outstanding Bonds	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Future Bonds	-	-	-	-	-	-	-	-	-	-	-	-	$96,000,000	$119,000,000
Total Airport Funds Applied to Debt Service	-	-	-	-	-	-	-	-	-	-	-	-	$96,000,000	$119,000,000
Net Debt Service	**-**	**-**	**-**	**-**	**-**	**$1,304,159**	**$30,401,213**	**$30,401,213**	**$41,517,205**	**$41,517,205**	**$41,517,205**	**$41,517,205**	**$649,766,149**	**$626,766,149**

Sources: *PSP International Airport, Unison Consulting, Compiled by Unison Consulting.*

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Customer Facility Charges

CFCs are charges imposed by airports on rental car companies to support the development and/or operation of rental car facilities. PSP is authorized to collect $9 per rental car transaction day, up to 5 days maximum. PSP will use CFCs to support the development of a consolidated rent-a-car facility (CONRAC) including land acquisition, environmental assessments, design, and construction. PSP is restricted as a result of California Code, that limits CFCs to a maximum of $9 per day and caps the number of transaction days that can be charged under an individual rental car contract to 5 days[3].

The funding plan assumes that PSP will use CFCs in a pay-go capacity to support early action items for the development of the CONRAC including the environmental assessment and design in both phase 1 and phase 2. The funding plan assumes a public-private partnership to facilitate the development of the CONRAC, with PSP contributing CFCs to the developer.

Airport Fund

PSP's Airport Fund receives annual deposits based on the revenues collected during the fiscal year less funds used to meet PSP's obligations, including O&M expenses, debt service and capital expenditures. As of the end of 2023, PSP's Airport Fund had a balance of approximately $87.5 million. The MP funding plan assumes a total of $218.4 million in project costs will be funded with Airport Funds. Refer to **Table 8-6** for details regarding the Airport Fund over the planning horizon.

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[3] Information regarding California CFC limitations was obtained from https://codes.findlaw.com/ca/government-code/gov-sect-50474-3/

Table 8-5: Projected CFC Cash Flow

	Budget	Projected											Total	
	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036-2040	2041-2045
Enplanements	1,686,142	1,756,186	1,826,941	1,891,025	1,956,235	2,016,796	2,073,371	2,129,597	2,188,101	2,251,372	2,317,763	2,385,030	12,955,103	14,766,443
Rental Car Transactions (16%)	269,783	280,990	292,311	302,564	312,998	322,687	331,739	340,736	350,096	360,220	370,842	381,605	2,072,816	2,362,631
Rental Car Transaction Days (3.6)	971,218	1,011,563	1,052,318	1,089,230	1,126,792	1,161,674	1,194,262	1,226,648	1,260,346	1,296,791	1,335,031	1,373,777	7,462,139	8,505,471
CFC Fund Beginning Balance	$39,324,779	$48,166,675	$56,882,376	$32,709,820	$42,596,852	$27,706,189	$27,777,305	$27,848,603	$27,920,084	$27,991,749	$28,063,597	$28,135,630	$21,712,795	$21,992,889
CFC Revenue	$8,740,958	$9,104,068	$9,470,862	$9,803,073	$10,141,124	$10,455,069	$10,748,358	$11,039,831	$11,343,115	$11,671,115	$12,015,281	$12,363,994	$67,159,254	$76,549,242
Interest Received (0.3%)	$100,938	$123,633	$146,005	$83,959	$109,337	$71,116	$71,298	$71,481	$71,665	$71,849	$72,033	$72,218	$55,732	$56,451
CFC Funded Projects	-	($512,000)	($33,789,422)	-	($15,000,000)	-	-	-	-	-	-	($23,887,525)	-	-
CFC Contributions to P3	-	-	-	-	($10,141,124)	($10,455,069)	($10,748,358)	($11,039,831)	($11,343,115)	($11,671,115)	($12,015,281)	($12,363,994)	($67,159,254)	($76,549,242)
CFC Fund Ending Balance	**$48,166,675**	**$56,882,376**	**$32,709,820**	**$42,596,852**	**$27,706,189**	**$27,777,305**	**$27,848,603**	**$27,920,084**	**$27,991,749**	**$28,063,597**	**$28,135,630**	**$4,320,323**	**$21,768,527**	**$22,049,340**

Sources: *PSP International Airport, Unison Consulting, Compiled by Unison Consulting.*

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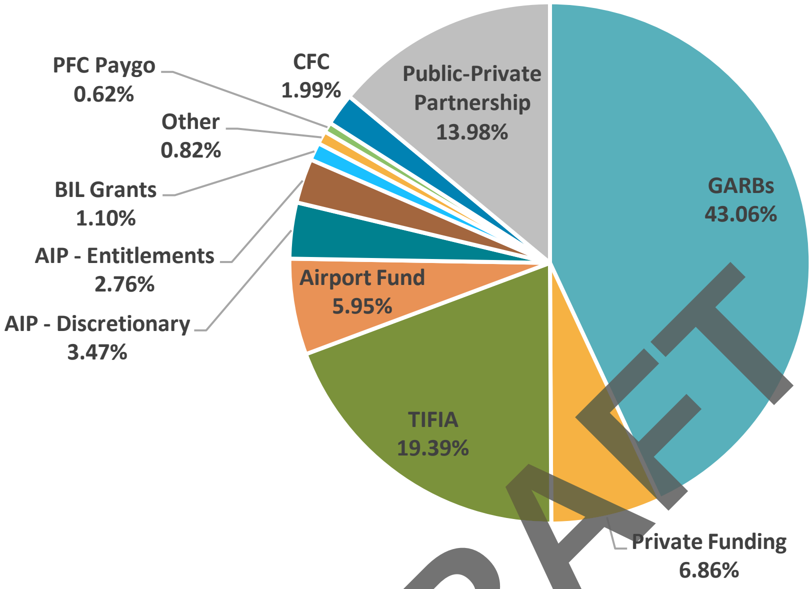
Funding Plan Summary

Figure 8-2, **Table 8-6**, and **Table 8-7** summarize MP project sources and uses of funds by project, reflecting the estimated escalated project costs. **Table 8-8** illustrates the MP sources and uses by project type.

Figure 8-2: Sources of Capital Funding MP Projects



Sources: PSP International Airport, Mead & Hunt, Unison Consulting, Compiled by Unison Consulting.

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Table 8-6: Airport Capital Fund

	Budget	Projected										
	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Beginning Balance	$87,493,393	$89,811,503	$80,352,769	$15,232,537	$22,085,053	$5,835,818	$3,390,111	$10,680,936	$4,077,723	$15,707,169	$30,394,439	$41,704,932
Revenues	$43,126,974	$44,902,286	$52,425,802	$56,438,816	$58,931,447	$66,633,507	$98,966,847	$101,907,110	$110,391,078	$113,164,205	$115,995,955	$120,069,354
O&M Expenses	($40,198,444)	($40,695,603)	($42,268,098)	($43,910,513)	($45,564,024)	($47,287,744)	($49,105,905)	($51,001,866)	($52,979,200)	($55,041,654)	($57,193,156)	($59,437,818)
Outstanding Debt Service	($2,497,000)	($2,497,500)	($2,498,750)	($2,495,500)	($2,497,750)	($2,495,000)	($2,497,250)	($2,499,000)	-	-	-	-
Future Debt Service	-	-	($3,671,603)	($3,671,603)	($3,671,603)	($7,397,773)	($36,494,827)	($36,494,827)	($47,610,818)	($47,610,818)	($47,610,818)	($47,610,818)
Airport Funded Projects	-	($12,564,480)	($72,198,664)	($3,185,792)	($26,971,501)	($16,703,897)	($7,970,723)	($22,653,735)	($2,780,529)	($123,794)	($3,802,952)	($49,490,371)
Airport Funds Applied to Debt Service	-	-	-	-	-	-	-	-	-	-	-	-
PFCs Used for Debt Service	$2,497,000	$2,497,500	$6,170,353	$6,167,103	$6,169,353	$8,588,613	$8,590,863	$8,592,613	$6,093,613	$6,093,613	$6,093,613	$6,093,613
Airline Revenue Share[1]	($610,421)	($1,100,937)	($3,079,272)	($2,489,995)	($2,645,157)	($3,783,413)	($4,198,181)	($4,453,509)	($1,484,699)	($1,794,281)	($2,172,149)	($2,863,607)
CFCs Used for Debt Service	-	-	-	-	-	-	-	-	-	-	-	-
Annual Deposit to Capital Fund	$2,318,109	($9,458,734)	($65,120,232)	$6,852,516	($16,249,234)	($2,445,707)	$7,290,824	($6,603,213)	$11,629,446	$14,687,271	$11,310,493	($33,239,647)
Ending Balance	**$89,811,503**	**$80,352,769**	**$15,232,537**	**$22,085,053**	**$5,835,818**	**$3,390,111**	**$10,680,936**	**$4,077,723**	**$15,707,169**	**$30,394,439**	**$41,704,932**	**$8,465,286**

Sources: *PSP International Airport, Unison Consulting, Compiled by Unison Consulting.*

[1] *Per AULA Appendix D Section III, 50% of Net Remaining Revenues are shared with the Airlines. The amortization of airport-funded projects rather than the capital expenditure in that year is used in calculating Net Remaining Revenues subject to Airline sharing.*

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Table 8-7: Estimated Capital Costs and Funding Sources (Part 1 of 2)

Project Description	Project Category	Total Project Costs in 2024 $	Total Escalated Projected Costs	AIP Entitlements	AIP Discretionary	Other	BIL Grants	PFC Paygo	Airport Fund	GARBs	CFC	TIFIA	Private Funding	Public-Private Partnership
Near-Term (2025-2029)														
TWY W & A1 Rehabilitation-(Construct)	Airside	$14,000,000	$14,336,000	$4,667,286	$2,776,974	-	$5,552,758	$1,338,982	-	-	-	-	-	-
Construct Temporary FIS	Terminal	$7,000,000	$7,168,000	-	-	-	-	$5,376,000	$1,792,000	-	-	-	-	-
GTC design/renovation	GT/Parking	$1,000,000	$1,024,000	-	-	-	$972,800	$51,200	-	-	-	-	-	-
Shade installation - TNC & Taxi islands - Design and install	GT/Parking	$500,000	$512,000	-	-	-	-	-	$512,000	-	-	-	-	-
Convert vacant terminal space into a lounge	Terminal	$1,000,000	$1,024,000	-	-	-	-	-	$1,024,000	-	-	-	-	-
Convert grass/turf areas to desert landscape Phase 1	Other	$300,000	$307,200	-	-	-	-	-	$307,200	-	-	-	-	-
Installation of new public announcement system in terminal and concourses	Terminal	$250,000	$256,000	-	-	-	-	-	$256,000	-	-	-	-	-
Terminal interior remodel/renovate/rehabilitation	Terminal	$500,000	$512,000	-	-	-	$316,160	$16,640	$179,200	-	-	-	-	-
Bono Elevator replacements	Terminal	$2,000,000	$2,048,000	-	-	-	$1,945,600	$102,400	-	-	-	-	-	-
Procure AWS screening equipment and any possible remodel/electrical	Terminal	$500,000	$512,000	-	-	-	-	-	$512,000	-	-	-	-	-
Replace both Bono escalators	Terminal	$3,000,000	$3,072,000	-	-	-	$2,918,400	$153,600	-	-	-	-	-	-
Automated Exit Lane design, demo and installation	Terminal	$1,500,000	$1,536,000	-	-	-	-	-	$1,536,000	-	-	-	-	-
Solid waste separator & hazmat storage- Design and construct	Infrastructure	$500,000	$512,000	-	-	-	-	$332,800	$179,200	-	-	-	-	-
Microlight Upgrade	Other	$200,000	$204,800	-	-	-	-	$133,120	$71,680	-	-	-	-	-
Hangar 18 outfall repair by GA hangars	Infrastructure	$500,000	$512,000	-	-	-	-	-	$512,000	-	-	-	-	-
ARFF station (Design)	Other	$3,500,000	$3,584,000	-	-	-	-	$3,046,400	$537,600	-	-	-	-	-
Environment Assessment for CONRAC	GT/Parking	$500,000	$512,000	-	-	-	-	-	-	-	$512,000	-	-	-
HVAC infrastructure replacement- 2 boilers, 3 chillers, and pumps	Terminal	$3,000,000	$3,072,000	-	-	-	-	$1,996,800	$1,075,200	-	-	-	-	-
Main terminal loop road and KDW crack seal and sealcoat	Infrastructure	$1,000,000	$1,024,000	-	-	-	-	-	$1,024,000	-	-	-	-	-
WiFi outdoor	Other	$300,000	$307,200	-	-	-	-	-	$307,200	-	-	-	-	-
Environmental Assessment for Terminal Phase 1	Terminal	$500,000	$512,000	-	-	-	-	$332,800	$179,200	-	-	-	-	-
Main Terminal Wexler Façade Restoration	Terminal	$1,500,000	$1,536,000	-	-	-	-	-	$1,536,000	-	-	-	-	-
Airport monument signs replacement	Other	$1,000,000	$1,024,000	-	-	-	-	-	$1,024,000	-	-	-	-	-
Terminal Restroom remodel - (construction -Phase 1) (Bono & Courtyard)	Terminal	$10,000,000	$10,485,760	-	-	-	-	-	-	$10,485,760	-	-	-	-
Remain Overnight (RON) Parking-(Design & Construct)	Airside	$10,000,000	$10,485,760	-	$2,230,000	-	-	-	-	$8,255,760	-	-	-	-

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Project Description	Project Category	Total Project Costs in 2024 $	Total Escalated Projected Costs	AIP Entitlements	AIP Discretionary	Other	BIL Grants	PFC Paygo	Airport Fund	GARBs	CFC	TIFIA	Private Funding	Public-Private Partnership
Baggage Claim Phase 1	Terminal	$22,500,000	$23,592,960	-	-	$5,000,000	$6,495,000	-	-	$12,097,960	-	-	-	-
Outbound Baggage Handling System and Terminal expansion- (Construct) Phase 1	Terminal	$32,500,000	$34,078,720	-	-	$12,500,000	$3,247,500	-	-	$18,331,220	-	-	-	-
Employee parking lot, Economy lot, and Lot A - (Construction)	GT/Parking	$10,000,000	$10,485,760	-	-	-	-	-	$10,485,760	-	-	-	-	-
Runway 13R/31L Rehabilitation & Taxiway A & J Connectors - (Design)	Airside	$3,000,000	$3,145,728	-	$2,851,917	-	-	-	$293,811	-	-	-	-	-
New Fire Alarm System-Main Terminal (minus ticketing), Bono Terminal, RJ Terminal	Terminal	$500,000	$524,288	-	-	-	-	-	$524,288	-	-	-	-	-
Design Phase 1 of the RCC	GT/Parking	$32,224,104	$33,789,422	-	-	-	-	-	-	-	$33,789,422	-	-	-
Terminal interior remodel/renovate/rehabilitation	Terminal	$500,000	$524,288	-	-	-	-	-	$524,288	-	-	-	-	-
Perimeter Fence Rehabilitation/Security Enhancements (Phase 1)	Other	$1,000,000	$1,048,576	-	$950,639	-	-	-	$97,937	-	-	-	-	-
Terminal Phase 1 (Design only)	Terminal	$66,997,541	$70,252,014	-	-	-	$10,000,000	-	$60,252,014	-	-	-	-	-
Convert airport vehicles to zero emissions	Other	$210,000	$220,201	-	$199,634	-	-	-	$20,567	-	-	-	-	-
Outbound Baggage Handling System and Terminal expansion- (Construct) Phase 2	Terminal	$32,500,000	$34,896,609	-	-	$12,500,000	$3,247,500	-	-	$19,149,109	-	-	-	-
Runway 13R/31L Rehabilitation & Taxiways A & J - (Construct)	Airside	$30,000,000	$32,212,255	-	$12,117,975	-	-	-	-	$20,094,280	-	-	-	-
Airport drainage Master Plan and/or project to address drainage	Infrastructure	$5,000,000	$5,368,709	-	$4,867,272	-	-	-	$501,437	-	-	-	-	-
Parking Revenue System (phase 2)	GT/Parking	$500,000	$536,871	-	-	-	-	-	$536,871	-	-	-	-	-
Terminal Restroom remodel - (construction -Phase 2)(Wexler)	Terminal	$5,000,000	$5,368,709	$4,786,186	-	-	-	-	-	$582,523	-	-	-	-
Perimeter Fence Rehabilitation/Security Enhancements (Phase 2)	Other	$1,000,000	$1,073,742	-	$973,454	-	-	-	-	$100,287	-	-	-	-
Terminal interior remodel/renovate/rehabilitation	Terminal	$500,000	$536,871	-	-	-	-	-	$187,905	$348,966	-	-	-	-
Main Terminal - Roof Rehabilitation (Design & Construct)	Terminal	$500,000	$536,871	-	-	-	-	-	$187,905	$348,966	-	-	-	-
Rubber removal/paint removal equipment	Airside	$1,000,000	$1,073,742	-	-	-	-	-	$1,073,742	-	-	-	-	-
Rehabilitate Taxilane G	Airside	$1,000,000	$1,073,742	-	$973,454	-	-	-	-	$100,287	-	-	-	-
Crack seal and sealcoat Runway 13L/31R	Airside	$650,000	$697,932	-	-	-	-	-	$697,932	-	-	-	-	-
Convert airport vehicles to zero emissions	Other	$210,000	$225,486	-	$204,425	-	-	-	-	$21,060	-	-	-	-
Signature Terminal and Apron Relocation	Hangar/FBO	$58,937,500	$64,802,467	-	$9,066,000	-	-	-	$10,000,000	-	-	-	$45,736,467	-
Construct Phase 1 of RCC	GT/Parking	$290,016,936	$318,876,993	-	-	-	-	-	-	-	$15,000,000	-	-	$303,876,993
Land Acquisition - 8.06 acre Parcel South of Airport between KDW and Ramon	Land Acquisition	$10,780,000	$11,852,735	-	$10,745,690	-	-	-	-	$1,107,045	-	-	-	-

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Project Description	Project Category	Total Project Costs in 2024 $	Total Escalated Projected Costs	AIP Entitlements	AIP Discretionary	Other	BIL Grants	PFC Paygo	Airport Fund	GARBs	CFC	TIFIA	Private Funding	Public-Private Partnership
Rehabilitate commercial aircraft parking apron around concourses	Airside	$22,000,000	$24,189,256	$4,716,142	-	-	$5,552,758	-	$13,920,356	-	-	-	-	-
Main terminal loop road and KDW rehabilitation	Infrastructure	$3,000,000	$3,298,535	$2,990,452	-	-	-	-	-	$308,083	-	-	-	-
Bono Tent Roof Replacement	Terminal	$2,000,000	$2,199,023	$1,866,489	-	-	-	-	-	$332,534	-	-	-	-
ASOS replacement	Airside	$500,000	$549,756	-	$498,409	-	-	-	-	$51,347	-	-	-	-
Conference/Meeting Rooms	Other	$100,000	$109,951	-	-	-	-	-	$109,951	-	-	-	-	-
Terminal interior remodel/renovate/rehabilitation	Terminal	$500,000	$549,756	-	-	-	-	-	$192,415	$357,341	-	-	-	-
Redesign VIP to expand ALT Control Center and incorporate Landside Operations	Other	$2,500,000	$2,748,779	-	-	-	-	-	$2,748,779	-	-	-	-	-
Maintenance Facility Phase 1	Other	$5,000,000	$5,497,558	-	-	-	-	-	-	$5,497,558	-	-	-	-
Terminal Phase 1 Construct (Excludes Design & CONRAC)	Terminal	$364,873,194	$410,810,695	-	-	-	-	-	$12,000,000	$263,243,166	-	$135,567,529	-	-
New Operations Control Center	Other	$2,500,000	$2,814,750	-	-	-	-	-	$2,814,750	-	-	-	-	-
ADA Improvements - Hearing, sight, sensory, mobility Impaired	Terminal	$750,000	$844,425	$765,556	-	-	-	-	-	$78,869	-	-	-	-
New 1500 Gal ARFF Apparatus	Other	$800,000	$900,720	-	$816,593	-	-	-	-	$84,127	-	-	-	-
Relocate Fuel Truck Parking	Other	$1,502,900	$1,692,115	-	-	-	-	-	$1,692,115	-	-	-	-	-
Solar Panel Development - Phase 1	Infrastructure	$5,000,000	$5,629,500	$4,155,469	-	-	-	-	-	$1,474,030	-	-	-	-
Terminal interior remodel/renovate/rehabilitation	Terminal	$500,000	$562,950	-	-	-	-	-	$197,032	$365,917	-	-	-	-
Total Near-Term		**$1,082,602,175**	**$1,185,272,178**	**$23,947,579**	**$49,272,436**	**$30,000,000**	**$40,248,476**	**$12,880,742**	**$131,624,335**	**$362,816,199**	**$49,301,422**	**$135,567,529**	**$45,736,467**	**$303,876,993**

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Table 8-8: Estimated Capital Costs and Funding Sources (Part 2 of 2)

Project Description	Project Category	Total Project Costs in 2024 $	Total Escalated Projected Costs	AIP Entitlements	AIP Discretionary	Other	BIL Grants	PFC Paygo	Airport Fund	GARBs	CFC	TIFIA	Private Funding	Public-Private Partnership
Mid-Term (2030-2034)														
ARFF Station - (Construct)	Other	$35,000,000	$40,352,253	-	$31,095,849	-	-	-	$6,052,838	$3,203,565	-	-	-	-
Taxiway D, B, & H Reconfiguration(s)	Airside	$4,410,300	$5,084,730	-	$4,609,816	-	-	-	-	$474,914	-	-	-	-
Rehabilitate TWY E & C	Airside	$20,000,000	$23,058,430	-	$4,408,262	-	-	-	-	$18,650,168	-	-	-	-
Crack seal and sealcoat TWY W & A1	Airside	$1,000,000	$1,152,922	-	-	-	-	-	$1,152,922	-	-	-	-	-
Inter-Modal Transportation Facility	GT/Parking	$50,000,000	$57,646,075	$4,986,235	-	-	-	-	-	$52,659,840	-	-	-	-
GA Customs Facilities	Hangar/FBO	$10,314,100	$12,176,740	-	-	-	-	-	$7,306,044	$4,870,696	-	-	-	-
Demo Dilapidated Hangars/Buildings (3)	Hangar/FBO	$8,000,000	$9,444,733	-	-	-	-	-	$9,444,733	-	-	-	-	-
Flight Kitchen	Other	$12,333,800	$14,561,181	-	-	-	-	-	-	-	-	-	$14,561,181	-

Project Description	Project Category	Total Project Costs in 2024 $	Total Escalated Projected Costs	AIP Entitlements	AIP Discretionary	Other	BIL Grants	PFC Paygo	Airport Fund	GARBs	CFC	TIFIA	Private Funding	Public-Private Partnership
Covered Solar Public Parking	GT/Parking	$5,000,000	$5,902,958	-	-	-	-	-	$5,902,958	-	-	-	-	-
Crack seal and sealcoat Runway 13R/31L & Taxiways A & J connectors	Airside	$2,000,000	$2,417,852	-	-	-	-	-	$2,417,852	-	-	-	-	-
Convert grass/turf areas to desert landscape Phase 2	Other	$300,000	$362,678	-	-	-	-	-	$362,678	-	-	-	-	-
Alejo Lot Upgrades	GT/Parking	$100,000	$123,794	-	-	-	-	-	$123,794	-	-	-	-	-
Landside Wayfinding Improvements	Other	$1,000,000	$1,237,940	$1,122,316	-	-	-	$115,624	-	-	-	-	-	-
Repave Lots "A" through "D"	GT/Parking	$3,000,000	$3,802,952	-	-	-	-	-	$3,802,952	-	-	-	-	-
Address ROFA to meet standards for Runway 13R/31L	Airside	$2,731,300	$3,148,975	-	$2,854,860	-	-	-	-	$294,114	-	-	-	-
Maintenance Facility Phase 2	Other	$5,000,000	$5,764,608	-	-	-	-	-	-	$5,764,608	-	-	-	-
Taxiways G & H Reconfiguration	Airside	$4,890,200	$5,638,017	-	$5,111,426	-	-	-	-	$526,591	-	-	-	-
Taxiways K & L Pavement Re-markings	Airside	$663,500	$764,963	-	-	-	-	-	$764,963	-	-	-	-	-
Runway 13L/31R Rehabilitation (small rwy) - Construct	Airside	$4,000,000	$4,611,686	-	$4,180,955	-	-	-	-	$430,731	-	-	-	-
Vertiport	Airside	$125,800	$145,038	-	-	-	-	-	-	$145,038	-	-	-	-
Atlantic Aviation Apron Expansion - South Leasehold	Hangar/FBO	$6,163,300	$7,105,801	-	-	-	-	-	-	-	-	-	$7,105,801	-
Land Acquisition - Tribal Parcel Northeast of Airport	Land Acquisition	$17,000,000	$19,599,666	-	$2,599,666	-	-	-	-	$17,000,000	-	-	-	-
Taxiway to Aviation Related Development	Airside	$2,484,600	$2,864,549	-	-	-	-	-	-	$2,864,549	-	-	-	-
Apron Expansion adjacent to Taxilane G	Airside	$32,060,200	$36,962,894	-	-	-	-	-	-	$36,962,894	-	-	-	-
Hangar Construction adjacent to Relocated Signature FBO	Hangar/FBO	$16,171,900	$18,644,931	-	-	-	-	-	-	-	-	-	$18,644,931	-
Hangar Construction adjacent to Taxilane G	Hangar/FBO	$50,312,500	$58,006,363	-	-	-	-	-	-	-	-	-	$58,006,363	-
Signature Fuel Farm Expansion	Hangar/FBO	$8,152,400	$9,399,077	-	-	-	-	-	-	-	-	-	$9,399,077	-
Atlantic Aviation Apron Expansion - North Leasehold	Hangar/FBO	$2,814,000	$3,244,321	-	-	-	-	-	-	-	-	-	$3,244,321	-
Atlantic Aviation Terminal Expansion & Building Remodel	Hangar/FBO	$7,130,000	$8,220,330	-	-	-	-	-	-	-	-	-	$8,220,330	-
Solar Panel Development - Phase 2	Infrastructure	$5,000,000	$5,764,608	-	$5,226,193	-	-	-	-	$538,414	-	-	-	-
Total Mid-Term		**$317,157,900**	**$367,211,062**	**$6,108,552**	**$60,087,027**	**-**	**-**	**$115,624**	**$37,331,733**	**$144,386,121**	**-**	**-**	**$119,182,005**	**-**

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Project Description	Project Category	Total Project Costs in 2024 $	Total Escalated Projected Costs	AIP Entitlements	AIP Discretionary	Other	BIL Grants	PFC Paygo	Airport Fund	GARBs	CFC	TIFIA	Private Funding	Public-Private Partnership
Long-Term (2035-2044)														
Terminal Phase 2	Terminal	$1,145,490,054	$1,486,931,102	$10,150,167	-	-	-	-	$43,000,000	$943,093,671	-	$490,687,264	-	-
Terminal Phase 3	Terminal	$93,188,731	$120,965,889	$25,299,546	-	-	-	-	-	$59,376,576	-	$36,289,767	-	-
Eastside Hangars and Landside Access	Hangar/FBO	$66,843,800	$86,768,213	-	-	-	-	-	-	-	-	-	$86,768,213	-
Eastside Hangar(s) Apron	Hangar/FBO	$13,476,600	$17,493,627	-	$10,000,000	-	-	$7,493,627	-	-	-	-	-	-
Runway 13L/31R & Taxiway E Extension	Airside	$6,805,800	$8,834,433	-	$8,009,297	-	-	$825,136	-	-	-	-	-	-
Taxiway Removal	Airside	$989,200	$1,284,055	-	-	-	-	$1,284,055	-	-	-	-	-	-
Maintenance Facility Phase 3	Other	$5,000,000	$6,490,371	-	-	-	-	-	-	$6,490,371	-	-	-	-
Convert grass/turf areas to desert landscape Phase 3	Other	$300,000	$389,422	-	-	-	-	-	-	$389,422	-	-	-	-
Crack seal and sealcoat TWY W & A1	Airside	$1,000,000	$1,298,074	-	-	-	-	-	$1,298,074	-	-	-	-	-
Crack seal and sealcoat Runway 13R/31L and Taxiways all connectors	Airside	$3,000,000	$3,894,223	-	-	-	-	-	$3,894,223	-	-	-	-	-
Crack seal and sealcoat Runway 13L/31R and all connectors	Airside	$1,000,000	$1,298,074	-	-	-	-	-	$1,298,074	-	-	-	-	-
Environmental Assessment for RCC Phase 2	GT/Parking	$500,000	$649,037	-	-	-	-	-	-	-	$649,037	-	-	-
RCC Phase 2 (Design)	GT/Parking	$17,902,280	$23,238,488	-	-	-	-	-	-	-	$23,238,488	-	-	-
RCC Phase 2 (Construct)	GT/Parking	$161,120,520	$209,146,392	-	-	-	-	-	-	-	-	-	-	$209,146,392
Total Long-Term		**$1,516,616,985**	**$1,968,681,402**	**$35,449,714**	**$18,009,297**	**-**	**-**	**$9,602,818**	**$49,490,371**	**$1,009,350,040**	**$23,887,525**	**$526,977,030**	**$86,768,213**	**$209,146,392**
Beyond Planning Period (2045+)														
Terminal Phase 4	Terminal	$89,779,568	$147,732,688	$35,677,473	-	-	-	-	-	$63,303,428	-	$48,751,787	-	-
Total Beyond Planning Period		**$89,779,568**	**$147,732,688**	**$35,677,473**	**-**	**-**	**-**	**-**	**-**	**$63,303,428**	**-**	**$48,751,787**	**-**	**-**
Total Mater Plan		**$3,006,156,628**	**$3,668,897,331**	**$101,183,318**	**$127,368,761**	**$30,000,000**	**$40,248,476**	**$22,599,184**	**$218,446,439**	**$1,579,855,789**	**$73,188,947**	**$711,296,347**	**$251,686,685**	**$513,023,386**

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Sources: *PSP International Airport, Mead & Hunt, Unison Consulting, Compiled by Unison Consulting.*

Note: *Projects are listed in the time period when they will be completed.*

Table 8-9: Sources and Uses of Capital Funding

Description	Near-Term	Mid-Term	Long-Term	Beyond Planning Period	Total
Sources of Capital Funding					
GARBs	$362,816,199	$144,386,121	$1,009,350,040	$63,303,428	$1,579,855,789
Private Funding	$45,736,467	$119,182,005	$86,768,213	-	$251,686,685
TIFIA	$135,567,529	-	$526,977,030	$48,751,787	$711,296,347
Airport Fund	$131,624,335	$37,331,733	$49,490,371	-	$218,446,439
AIP - Discretionary	$49,272,436	$60,087,027	$18,009,297	-	$127,368,761
AIP - Entitlements	$23,947,579	$6,108,552	$35,449,714	$35,677,473	$101,183,318
BIL Grants	$40,248,476	-	-	-	$40,248,476
Other	$30,000,000	-	-	-	$30,000,000
PFC Paygo	$12,880,742	$115,624	$9,602,818	-	$22,599,184
CFC	$49,301,422	-	$23,887,525	-	$73,188,947
Public-Private Partnership	$303,876,993	-	$209,146,392	-	$513,023,386
Total Sources	**$1,185,272,178**	**$367,211,062**	**$1,968,681,402**	**$147,732,688**	**$3,668,897,331**
Uses of Capital Funding					
Airside	$87,764,170	$85,850,054	$16,608,860	-	$190,223,084
Land Acquisition	$11,852,735	$19,599,666	-	-	$31,452,401
Terminal	$617,011,939	$0	$1,607,896,991	$147,732,688	$2,372,641,618
GT/Parking	$365,737,046	$67,475,779	$233,033,918	-	$666,246,743
Other	$21,759,078	$62,278,659	$6,879,793	-	$90,917,530
Infrastructure	$16,344,744	$5,764,608	-	-	$22,109,351
Hangar/FBO	$64,802,467	$126,242,297	$104,261,840	-	$295,306,604
Total Uses	**$1,185,272,178**	**$367,211,062**	**$1,968,681,402**	**$147,732,688**	**$3,668,897,331**

Sources: *PSP International Airport, Mead & Hunt, Unison Consulting, Compiled by Unison Consulting.*

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The key constraints of the proposed funding plan for the MP CIP are the following:

- The amount of PFCs available for the MP CIP funding is somewhat constrained by PFCs pledged to pay debt service on outstanding bonds through FY2031. Through FY2031, the annual debt service on the outstanding bonds for which PFCs are pledged averages 35.6 percent of projected annual PFCs in those years.
- In addition, there is additional PFC eligibility for several projects. However, the annual PFC deposits do not allow PSP to fully fund the PFC eligible project costs.
- The funding plan assumes private funding for the design and construction of a CONRAC. The total project cost including the environmental assessment, design, and construction is projected to be $487.3 million of which 97.7 percent is anticipated to be privately funded. PSP is restricted in its

ability to increase CFCs as result of limitations set by the state of California[4] ($9 per transaction day), which could pose a challenge to PSP funding the CONRAC and PSP's ability to find private investment.

AIRLINE RATES AND CHARGES

The AULA sets forth the procedures for calculating landing fees, terminal building rentals, loading bridge fees, baggage handling system (BHS) fees, as well as certain other fees and charges further discussed below. The terminal rental rate, loading bridge fee, and baggage handling system fee are calculated using a compensatory ratemaking methodology while the landing fee uses a residual ratemaking methodology. The AULA will expire on June 30, 2028, not including two two-year extensions. The extensions of the AULA are subject to mutual agreement with 66 percent or more of signatory carriers needing to provide notice for the agreement not to be extended. For this analysis, it is assumed that the key provisions of the current airline rates and charges methodology will remain in effect throughout the planning horizon presented in this chapter.

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PSP initially sets airlines rates and charges for the year using budget amounts for expenses and projections for airline activity. If expenses or airline activity used in the calculation of the fees are likely to vary by more than 10 percent, PSP can make an adjustment during the fiscal year, with 30-day written notice to the airlines. Upon completion of the fiscal year, PSP calculates the airline rates and charges using actual results. The difference between the fees collected by PSP and the actual results is billed or credited to the airlines and payable within 60 days.

The AULA includes a revenue share with the signatory carriers. Signatory carriers are granted a 50% share of net remaining airport revenues. Net remaining airport revenues equal total airport revenues less O&M expenses, O&M reserve, debt service, debt service coverage, other debt, and airport-funded capital expenditures.

Landing Fee

PSP establishes a landing fee in accordance with the provisions set for in the AULA. The landing fee is calculated by dividing the Net Landing Fee Requirement (the sum of cost attributable to the airfield less applicable credits) by total landed weight in thousand-pound units. The Landing Fee Requirement is comprised of the following:

- O&M expenses that are directly assignable to the airfield and those expenses associated with the maintenance and operation of the Airport that are not directly assignable but are allocated to the airfield.
- O&M reserve equal to the difference between the Airport's current fiscal year O&M budget less the prior year's fiscal year O&M budget.

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[4] Information regarding California CFC limitations was obtained from https://codes.findlaw.com/ca/government-code/gov-sect-50474-3/

- Debt service that is directly assignable to the airfield and debt service associated with the Airport that is not directly assignable but are allocated to the airfield.
- Debt service coverage equal to 25 percent of the debt service.
- Other debt is any debt other than bonds incurred by the City of Palm Springs including but not limited to interim financing.
- Capital expenditures reflect the amortization of any single item that costs $300,000 or more (net of PFCs, CFCs, grants, or insurance proceeds) with useful life more than 3-years acquired or constructed to improve, maintain, or develop the Airport.
- Capital outlays reflect any single item that costs $300,000 or less (net of PFCs, CFCs, grants, or insurance proceeds) acquired or constructed to improve, maintain, or develop the Airport.
- Credits are reductions to the above amounts primarily from revenues that are attributable to the airfield. These credits include rents from Airport use permits, airfield concessions, land rentals, electrical reimbursements, and FAA fingerprint reimbursement.

Terminal Rental Rate

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PSP establishes an annual terminal rental rate in accordance with the provisions set for in the AULA. The terminal rental rate is calculated by dividing the Net Terminal Requirement (the sum of cost attributable to the terminal less applicable credits) by total rentable space. The Terminal Requirement is comprised of the following:

- O&M expenses that are directly assignable to the terminal and those expenses associated with the maintenance and operation of the Airport that are not directly assignable but are allocated to the terminal.
- O&M reserve equal to the difference between the Airport’s current fiscal year O&M budget less the prior year’s fiscal year O&M budget.
- Debt service that is directly assignable to the terminal and debt service associated with the Airport that is not directly assignable but are allocated to the terminal.
- Debt service coverage equal to 25 percent of the debt service.
- Other debt is any debt other than bonds incurred by the City of Palm Springs including but not limited to interim financing.
- Capital expenditures reflect the amortization of any single item that costs $300,000 or more (net of PFCs, CFCs, grants, or insurance proceeds) with useful life more than 3-years acquired or constructed to improve, maintain, or develop the Airport.
- Capital outlays reflect any single item that costs $300,000 or less (net of PFCs, CFCs, grants, or insurance proceeds) acquired or constructed to improve, maintain, or develop the Airport. Credits are reductions to the above amounts primarily from revenues that are attributable to the terminal.

Loading Bridge Fee

PSP establishes an annual loading bridge fee in accordance with the provisions set for in the AULA. The loading bridge fee is calculated by dividing the Net Loading Bridge Requirement (the sum of cost attributable to the loading bridge less applicable credits) by the total number of loading bridges. The Loading Bridge Requirement is comprised of the following:

- O&M expenses that are directly assignable to the loading bridges and those expenses associated with the maintenance and operation of the Airport that are not directly assignable but are allocated to the loading bridges.
- O&M reserve equal to the difference between the Airport's current fiscal year O&M budget less the prior year's fiscal year O&M budget.
- Debt service that is directly assignable to the loading bridges and debt service associated with the Airport that is not directly assignable but are allocated to the loading bridges.
- Debt service coverage equal to 25 percent of the debt service.
- Other debt is any debt other than bonds incurred by the City of Palm Springs including but not limited to interim financing.
- Capital expenditures reflect the amortization of any single item that costs $300,000 or more (net of PFCs, CFCs, grants, or insurance proceeds) with useful life more than 3-years acquired or constructed to improve, maintain, or develop the Airport.
- Capital outlays reflect any single item that costs $300,000 or less (net of PFCs, CFCs, grants, or insurance proceeds) acquired or constructed to improve, maintain, or develop the Airport.
- Credits are reductions to the above amounts primarily from revenues that are attributable to the loading bridges. No loading bridge credits were assumed through the planning horizon.

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Baggage Handling System Fee

PSP establishes an annual BHS fee in accordance with the provisions set for in the AULA. The BHS fee is calculated by dividing the BHS Requirement (the sum of cost attributable to the baggage handling system) by the total number of total enplaned passengers. The fee per enplaned passenger is then multiplied by 125 percent to determine the non-signatory airlines[5] BHS revenue. The net signatory requirement is reduced by the total amount of revenue collected from the non-signatory airlines. The net signatory BHS fee is allocated to individual signatory airlines using a two-part allocation methodology:

1. 90 percent of the fee is allocated based on the signatory airlines share of enplaned passengers.
2. 10 percent of the fee is allocated in an equal amount to each signatory airline.

The BHS Requirement is comprised of the following:

- O&M expenses that are directly assignable to the BHS and those expenses associated with the maintenance and operation of the Airport that are not directly assignable but are allocated to the BHS.

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[5] Signatory airlines are the airlines that have signed the AULA. Non-signatory airlines operate at PSP under an operating agreement but they are not party to the AULA.

- O&M reserve equal to the difference between the Airport's current fiscal year O&M budget less the prior year's fiscal year O&M budget.
- Debt service that is directly assignable to the BHS and debt service associated with the Airport that is not directly assignable but are allocated to the BHS.
- Debt service coverage equal to 25 percent of the debt service.
- Other debt is any debt other than bonds incurred by the City of Palm Springs including but not limited to interim financing.
- Capital expenditures reflect the amortization of any single item that costs $300,000 or more (net of PFCs, CFCs, grants, or insurance proceeds) with useful life more than 3-years acquired or constructed to improve, maintain, or develop the Airport.
- Capital outlays reflect any single item that costs $300,000 or less (net of PFCs, CFCs, grants, or insurance proceeds) acquired or constructed to improve, maintain, or develop the Airport.

Operation And Maintenance Expenses

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O&M expenses support the operation, maintenance, and repair of the Airport, excluding capital expenditures. The major categories of O&M expenses are Personnel Costs, Materials, Supplies, Services, and Special Charges. Personnel Costs were the largest category in FY2023, representing 40.0 percent of total expenses. Materials, Supplies, and Services accounted for 25.3 percent of total expenses, while Special Charges accounted for the remaining 34.8 percent.

Table 8-10: Historical O&M Expenses (For Fiscal Years 2019 to 2023)

	2019	2020	2021	2022	2023	CAGR
Personnel Costs	$12,224,439	$12,772,571	$14,210,489	$12,637,978	$10,664,662	-2.7%
Materials, Supplies, Services	$5,944,334	$6,017,307	$4,839,809	$6,694,733	$6,746,665	2.6%
Special Charges	$3,153,939	$2,816,300	$5,777,260	$8,576,601	$9,282,365	24.1%
Debt Service Audit Services	-	-	-	-	-	0.0%
Total O&M Expenses	**$21,322,712**	**$21,606,178**	**$24,827,558**	**$27,909,312**	**$26,693,692**	**4.6%**

Sources: *PSP International Airport, Compiled by Unison Consulting.*

As presented in **Table 8-10**, O&M expenses increased $5.4 million or 25.2 percent between FY2019 and FY2023. In FY2023 expenses decreased $1.2 million or 4.4 percent compared to FY2022 primarily as result lower personnel costs.

Table 8-11 shows the projected O&M expenses through the planning horizon. O&M expenses are expected to grow at a compound annual growth rate of 3.6 percent during the forecast period, with Personnel Costs continuing to be the largest cost driver, averaging 55.1 percent through FY2030.

Table 8-11: Projected O&M Expenses (For Fiscal Years 2024 to 2035)

	Budget	Projected											Total	Total	CAGR
	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036 - 2040	2041 - 2045	2024 - 2045
Personnel Costs	$21,616,510	$22,323,356	$23,064,470	$23,835,888	$25,027,683	$26,279,067	$27,593,020	$28,972,671	$30,421,305	$31,942,370	$33,539,489	$35,216,463	$204,322,848	$260,773,484	4.5%
Materials, Supplies, Services	$13,938,775	$14,568,913	$15,229,060	$15,920,680	$16,286,855	$16,661,453	$17,061,328	$17,470,800	$17,890,099	$18,319,461	$18,759,128	$19,209,347	$103,187,415	$116,178,701	2.6%
Special Charges	$4,643,159	$3,803,333	$3,974,568	$4,153,945	$4,249,486	$4,347,224	$4,451,557	$4,558,395	$4,667,796	$4,779,823	$4,894,539	$5,012,008	$26,923,150	$30,312,772	1.4%
Debt Service Audit Services	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0%
Total O&M Expenses	**$40,198,444**	**$40,695,603**	**$42,268,098**	**$43,910,513**	**$45,564,024**	**$47,287,744**	**$49,105,905**	**$51,001,866**	**$52,979,200**	**$55,041,654**	**$57,193,156**	**$59,437,818**	**$334,433,413**	**$407,264,957**	**3.6%**

Sources: *PSP International Airport, Unison Consulting, Compiled by Unison Consulting.*

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Personnel Costs

Personnel Costs are expenses comprised of the salaries, wages, and fringe benefits paid to individuals employed by the Airport to operate and maintain the terminal, airfield, roadways, and other facilities of the airport. Other facilities include IT, HR, Engineering, Police, Fire, and the Airport's allocation of costs from City staff services. Personnel Costs are projected to increase from $21.6 million in FY2024 to $57.4 million in FY2045, a compound annual growth rate of 4.5 percent. The increase accounts for inflationary factors, higher demand for skilled workers, in addition to the likely need for additional staffing as a result of the redevelopment efforts.

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Materials, Supplies, and Services

Materials, Supplies, and Services are comprised of expenses related to contractual services, utilities, materials, and other items supporting the operation and repair of airport facilities. The largest component of this category is contractual services, which account for approximately 50 percent of the costs in FY2024. Material, Supplies, and Services are projected to increase from $13.9 million in FY2024 to $24.4 million in FY2045, a compound annual growth rate of 2.6 percent. Expenses within this category are projected to increase with inflation over the forecast period.

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Special Charges

Special Charges are comprised of expenses related to administrative services, insurance, vehicle repairs and maintenance, safety overhead, airline incentives. The City calculates these expenses on an annual basis and the Airport is charged for the support services in areas such as procurement, human resources, city clerk administration, IT administration, and facilities administration. The largest component of this category is administrative services, which account for approximately 45.9 percent of the costs in FY2024. Special Charges are projected to increase from $4.6 million in FY2024 to $6.4 million in FY2045, a compound annual growth rate of 1.4 percent. Expenses within this category are projected to increase with inflation over the forecast period.

REVENUES

Revenues are comprised of all revenues collected by the City with respect to the Airport. Neither the General Fund of the City or any operating revenues of the Airport other than PFC Revenues are pledged to or liable for the repayment of the Bonds[6].

Operating Revenues are comprised of Airlines Revenues, Concession Fees, Ground Transportation Fees, and Other Fees. Ground Transportation Fees were the largest revenue category in FY2023, representing 62.2 percent of total operating revenues. Airline Revenues accounted for 20.7 percent of total operating revenues, Concessions Fees accounted for 8.7 percent of total operating revenues, while Other Fees accounted for the remaining 8.3 percent of total operating revenues.

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Table 8-12: Historical Operating Revenues (For Fiscal Years 2019 to 2023)

	2019	2020	2021	2022	2023	CAGR
Airline Revenues						
Airfield Landing Fees	$4,002,544	$3,434,360	$4,343,933	$5,470,737	$5,990,047	8.4%
Terminal Rents	$2,714,154	$7,535,878	$6,119,334	$2,180,132	$2,187,696	-4.2%
Baggage Handling System Fees	-	-	-	-	$6,904	0.0%
Aircraft Gate Fees	-	-	-	$1,374,922	$1,472,314	0.0%
Total Airline Revenues	**$6,716,697**	**$10,970,239**	**$10,463,267**	**$9,025,791**	**$9,656,961**	**7.5%**
Concession Fees						
Airfield Concessions	$2,213,032	$2,087,460	$2,297,412	$2,805,445	$3,019,063	6.4%
Terminal Concessions	$1,063,885	$970,230	$732,232	$1,008,842	$1,039,825	-0.5%
Total Concession Fees	**$3,276,917**	**$3,057,690**	**$3,029,644**	**$3,814,286**	**$4,058,888**	**4.4%**
Ground Transportation Fees						
Parking	$3,843,087	$3,306,433	$2,705,212	$5,379,712	$6,223,971	10.1%
Ground Transportation	$735,603	$722,316	$418,682	$1,149,617	$1,313,982	12.3%
On-Airport Rental Car Revenue	$7,614,455	$7,500,952	$5,685,145	$11,131,881	$12,747,751	10.9%
Off Airport Rental Car Revenue	$36,034	$32,599	$42,029	$4,264,713	$8,730,169	199.8%
Total Ground Transportation Fees	**$12,229,179**	**$11,562,301**	**$8,851,067**	**$21,925,923**	**$29,015,873**	**18.9%**

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[6] Obtained from the 2019 Airport Passenger Facility Charge Revenue Bonds Official Statement

	2019	2020	2021	2022	2023	CAGR
Other Fees						
Non-Airline Rental Revenue	$1,865,207	$1,574,235	$1,091,525	$1,814,396	$2,754,722	8.1%
Miscellaneous	$909,053	$745,878	$573,724	$62,863	$1,137,896	4.6%
Total Other Fees	**$2,774,261**	**$2,320,113**	**$1,665,248**	**$1,877,259**	**$3,892,618**	**7.0%**
Total Operating Revenues	**$24,997,055**	**$27,910,343**	**$24,009,226**	**$36,643,260**	**$46,624,340**	**13.3%**

Sources: *PSP International Airport, Compiled by Unison Consulting.*

As presented in **Table 8-12**, operating revenues increased $21.6 million or 86.5 percent between FY2019 and FY2023. The increase in revenues was primary due to the 16.8 million in Ground Transportation Fees due to increased rental car activity that occurred at PSP because of the increased passenger activity during the Covid 19 Pandemic. Additionally, Airline Revenues increased by 2.9 million as a result of increased airline activity at PSP. **Table 8-13** shows the projected operating revenues through the planning horizon. Operating revenues are expected to grow at a compound annual growth rate of 7.5 percent during the forecast period, with Airline Revenues being the largest revenue stream, averaging 59.0 percent through FY2030. The increase in Airline Revenues is driven by the additional debt service that is projected to be collected from the airlines in the Terminal.

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Table 8-13: Projected Operating Revenues (For Fiscal Years 2024 to 2035)

	Budget	Projected											Total		CAGR
	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036 - 2040	2041 - 2045	2024 - 2045
Airline Revenues															
Airfield Landing Fees	$6,716,963	$6,933,610	$8,105,961	$8,163,656	$8,747,954	$12,671,855	$13,037,784	$13,943,195	$20,447,643	$20,901,797	$21,257,208	$21,700,672	$116,070,107	$123,836,242	6.3%
Terminal Rents	$8,310,132	$8,884,276	$10,680,710	$12,858,206	$13,297,564	$13,789,805	$35,349,603	$35,734,826	$36,009,677	$36,428,606	$36,865,559	$37,321,367	$537,978,456	$544,746,690	12.4%
Loading Bridge Fees	$1,187,685	$1,054,453	$1,233,176	$1,294,835	$1,333,232	$1,386,116	$1,442,348	$1,500,554	$1,561,336	$1,624,815	$1,691,119	$1,760,379	$9,954,413	$12,217,990	3.7%
Baggage Handling System Fees	$897,000	$986,700	$3,876,239	$3,928,041	$3,926,360	$5,794,155	$5,821,884	$5,849,217	$5,877,206	$5,905,866	$5,935,215	$5,965,268	$30,302,988	$31,170,174	9.3%
Aircraft Gate Fees	$4,378,744	$4,667,830	$5,404,304	$6,307,516	$6,552,329	$6,909,614	$15,434,252	$15,944,447	$16,452,818	$17,069,746	$17,754,152	$18,467,993	$269,206,932	$310,079,077	13.1%
Total Airline Revenues	**$21,490,524**	**$22,526,870**	**$29,300,390**	**$32,552,254**	**$33,857,439**	**$40,551,544**	**$71,085,872**	**$72,972,239**	**$80,348,679**	**$81,930,830**	**$83,503,252**	**$85,215,678**	**$963,512,895**	**$1,022,050,172**	**9.3%**
Concession Fees															
Airfield Concessions	$2,437,483	$2,502,441	$2,568,641	$2,635,900	$2,728,180	$2,808,744	$2,889,133	$2,971,323	$3,057,163	$3,148,243	$3,244,023	$3,342,348	$18,269,494	$21,130,352	2.8%
Terminal Concessions	$1,047,880	$1,074,228	$1,101,263	$1,129,002	$1,274,865	$1,312,094	$1,350,844	$1,390,569	$1,431,748	$1,474,870	$1,519,717	$1,565,940	$10,393,691	$12,297,698	4.3%
Total Concession Fees	**$3,485,363**	**$3,576,669**	**$3,669,904**	**$3,764,902**	**$4,003,045**	**$4,120,838**	**$4,239,977**	**$4,361,892**	**$4,488,910**	**$4,623,113**	**$4,763,740**	**$4,908,288**	**$28,663,185**	**$33,428,051**	**3.3%**
Ground Transportation Fees															
Parking	$4,918,870	$5,106,577	$5,297,864	$5,491,523	$5,681,231	$5,856,993	$6,710,795	$6,892,682	$7,081,971	$7,286,702	$7,501,567	$8,642,263	$48,127,047	$61,415,396	4.9%
Ground Transportation	$726,690	$741,687	$756,998	$772,630	$825,963	$851,533	$976,093	$1,002,563	$1,030,105	$1,059,892	$1,091,147	$1,257,552	$7,003,624	$8,940,419	4.8%
On-Airport Rental Car Revenue	$9,555,451	$9,921,356	$10,293,963	$10,671,168	$11,283,642	$11,891,979	$12,509,833	$13,148,047	$13,823,806	$14,554,960	$15,333,551	$16,146,720	$94,166,221	$120,497,791	4.7%
Off Airport Rental Car Revenue	$40,511	$42,062	$43,642	$45,241	$47,873	$50,490	$53,152	$55,904	$58,818	$61,972	$65,330	$68,840	$402,237	$516,175	4.8%
Total Ground Transportation Fees	**$15,241,522**	**$15,811,683**	**$16,392,468**	**$16,980,562**	**$17,838,709**	**$18,650,995**	**$20,249,874**	**$21,099,196**	**$21,994,701**	**$22,963,526**	**$23,991,596**	**$26,115,376**	**$149,699,130**	**$191,369,781**	**19.3%**
Other Fees															
Non-Airline Rental Revenue	$2,090,479	$2,147,558	$2,206,289	$2,266,723	$2,318,857	$2,372,191	$2,429,123	$2,487,422	$2,547,121	$2,608,251	$2,670,849	$2,734,950	$14,691,411	$16,541,058	2.3%
Miscellaneous	$819,086	$839,507	$856,751	$874,375	$913,397	$937,938	$962,000	$986,361	$1,011,667	$1,038,485	$1,066,517	$1,095,063	$5,918,650	$6,708,910	2.5%
Total Other Fees	**$2,909,565**	**$2,987,064**	**$3,063,041**	**$3,141,098**	**$3,232,254**	**$3,310,129**	**$3,391,123**	**$3,473,783**	**$3,558,787**	**$3,646,736**	**$3,737,367**	**$3,830,012**	**$20,610,061**	**$23,249,968**	**2.4%**
Total Operating Revenues	**$43,126,974**	**$44,902,286**	**$52,425,802**	**$56,438,816**	**$58,931,447**	**$66,633,507**	**$98,966,847**	**$101,907,110**	**$110,391,078**	**$113,164,205**	**$115,995,955**	**$120,069,354**	**$1,162,485,271**	**$1,270,097,972**	**7.5%**

Sources: *PSP International Airport, Compiled by Unison Consulting.*

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Airline Revenues

Airlines Revenues consist of Airline Landing Fees, Terminal Rents, Loading Bridge Fees, BHS Fees, and Aircraft Gate Fees. Airline Revenues grew from $6.7 million in FY2019 to $9.7 million in FY2023, representing a compound annual growth rate of 7.5 percent over the same period.

Airline Revenues are projected to increase at a compound annual growth rate of 9.3 percent from FY2024 through FY2045 to $209.7 million. Terminal Rents are the primary driver of the increase as a result of the facility improvements included within the MP CIP.

Airline Landing Fees

Airlines Landing Fees grew from $4.0 million in FY2019 to $6.0 million in FY2023, representing a compound annual growth rate of 8.4 percent over the same period. Airline Landing Fees comprised 62.0 percent of Airline Revenues and 12.8 percent of Operating Revenues in FY2023.

As shown in **Table 8-14**, Airline Landing Fees are expected to increase from $6.7 million in FY2024 to $21.7 million in FY2035, representing a compound annual growth rate of 10.3 percent over the same period. The increase is driven primarily by debt service related to airfield improvement contained in the MP CIP. The projected landing rate is forecasted to increase from $3.76 in FY2024 to $9.29 in FY2035. Airline weights are expected to increase an average of 2.5 percent per year from FY2024 to FY2035.

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Table 8-14: Calculation or Projected Airline Landing Fees (For Fiscal Years 2024 to 2035)

	Budget	Projected											Total	
	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036 - 2040	2041 - 2045
O&M Expenses	$8,486,163	$8,701,530	$8,925,781	$9,157,028	$9,527,872	$9,915,257	$10,323,337	$10,749,717	$11,195,260	$11,660,875	$12,147,510	$12,656,163	$71,757,342	$88,441,698
O&M Reserve	-	$215,367	$224,251	$231,247	$370,844	$387,385	$408,080	$426,380	$445,544	$465,614	$486,635	$508,653	$2,911,960	$3,642,867
Debt Service	-	-	$616,462	$616,462	$616,462	$2,182,874	$2,189,250	$2,189,250	$7,082,031	$7,082,031	$7,082,031	$7,082,031	$35,410,155	$35,410,155
Debt Service Coverage	-	-	$154,116	$154,116	$154,116	$545,719	$547,312	$547,312	$1,770,508	$1,770,508	$1,770,508	$1,770,508	$8,852,539	$8,852,539
Other Debt	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Capital Expenditures	$214,889	$214,889	$251,025	$296,949	$465,835	$2,097,726	$2,097,726	$2,631,372	$2,631,372	$2,680,361	$2,612,861	$2,612,861	$13,175,717	$6,095,972
Capital Outlay	$215,000	$50,000	$229,000	$50,000									$250,000	
Airfield Costs	**$8,916,052**	**$9,181,787**	**$10,400,634**	**$10,505,801**	**$11,185,129**	**$15,178,962**	**$15,615,705**	**$16,594,030**	**$23,174,715**	**$23,709,389**	**$24,149,545**	**$24,680,216**	**$132,357,713**	**$142,693,231**
Less:														
Credits	$2,199,089	$2,248,176	$2,294,673	$2,342,145	$2,437,175	$2,507,106	$2,577,921	$2,650,835	$2,727,072	$2,807,592	$2,892,337	$2,979,545	$20,891,325	$25,659,816
Net Airfield Requirement	**$6,716,963**	**$6,933,610**	**$8,105,961**	**$8,163,656**	**$8,747,954**	**$12,671,855**	**$13,037,784**	**$13,943,195**	**$20,447,643**	**$20,901,797**	**$21,257,208**	**$21,700,672**	**$111,466,388**	**$117,033,414**
Total Landed Weights	1,788,072	1,823,834	1,860,310	1,897,517	1,954,541	2,005,350	2,050,002	2,097,442	2,149,596	2,207,318	2,271,511	2,337,029	12,688,341	14,443,881
Landing Fee Rate	$3.76	$3.80	$4.36	$4.30	$4.48	$6.32	$6.36	$6.65	$9.51	$9.47	$9.36	$9.29	$8.78	$8.10
Landing Fee Rate (2024 $)	$3.76	$3.62	$3.95	$3.72	$3.68	$4.95	$4.75	$4.72	$6.44	$6.10	$5.75	$5.43	-	-

Sources: PSP International Airport, Mead & Hunt, Unison Consulting, Compiled by Unison Consulting.

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Terminal Rents

Terminal Rents declined from $2.7 million in FY2019 to $2.2 million in FY2023, representing a compound annual growth rate of -4.2 percent over the same period. Terminal Rents comprised 22.7 percent of Airline Revenues and 4.7 percent of Operating Revenues in FY2023.

As shown in **Table 8-15**, Terminal Rents are expected to increase from $8.3 million in FY2024 to $37.3 million in FY2035, representing a compound annual growth rate of 13.3 percent over the same period. The increase is driven primarily by debt service related to terminal improvement and developments contained in the MP CIP.

Loading Bridge Fees

As shown in **Table 8-16**, Loading Bridge Fee are expected to increase from $1.2 million in FY2024 to $1.8 million in FY2035, representing a compound annual growth rate of 3.3 percent over the same period. The increase is driven primarily by increases in O&M expenses as a result of inflationary pressures.

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BHS Fee

As shown in **Table 8-17**, BHS Fees are expected to increase from $897.0 thousand in FY2024 to $6.0 million in FY2035, representing a compound annual growth rate of 17.1 percent over the same period. The increase is driven primarily by debt service related to terminal improvement and developments contained in the MP CIP.

Aircraft Gate Fee

Aircraft Gate Fees grew from $1.4 million in FY2022 to $1.5 million in FY2023, 7.1 percent. Aircraft Gate Fees comprised 15.2 percent of Airline Revenues and 3.2 percent of Operating Revenues in FY2023.

As shown in **Table 8-18**, BHS Fees are expected to increase from $4.4 million in FY2024 to $18.5 million in FY2035, representing a compound annual growth rate of 12.7 percent over the same period. The increase is driven primarily by debt service related to terminal improvement and developments contained in the MP CIP

Table 8-15: Calculation of Projected Terminal Rental Rate (For Fiscal Years 2024 to 2035)

	Budget	Projected											Total	
	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036 - 2040	2041 - 2045
O&M Expenses	$13,308,675	$13,609,285	$14,240,625	$14,902,550	$15,458,427	$16,037,744	$16,648,910	$17,286,057	$17,950,375	$18,643,108	$19,365,563	$20,119,109	$113,091,178	$137,504,399
O&M Reserve	-	$300,610	$631,340	$661,925	$555,877	$579,318	$611,166	$637,147	$664,317	$692,733	$722,455	$753,545	$4,286,735	$5,310,961
Debt Service	-	-	$782,977	$782,977	$782,977	$958,388	$29,937,365	$29,937,365	$29,937,365	$29,937,365	$29,937,365	$29,937,365	$704,382,361	$704,382,361
Debt Service Coverage	-	-	$195,744	$195,744	$195,744	$239,597	$7,484,341	$7,484,341	$7,484,341	$7,484,341	$7,484,341	$7,484,341	$176,095,590	$176,095,590
Other Debt	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Capital Expenditures	$701,507	$1,083,627	$1,922,742	$5,391,105	$5,847,595	$5,872,923	$6,119,538	$6,119,538	$5,901,184	$5,901,184	$5,901,184	$5,901,184	$37,978,066	$33,191,555
Capital Outlay	$295,000	$300,000	$612,500	$200,000	$50,000								$250,000	
Terminal Costs	**$14,305,182**	**$15,293,522**	**$18,385,929**	**$22,134,302**	**$22,890,620**	**$23,737,970**	**$60,851,321**	**$61,514,449**	**$61,987,582**	**$62,708,731**	**$63,460,908**	**$64,245,543**	**$1,036,083,930**	**$1,056,734,866**
Less:														
Credits	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Airport Funds Applied to Debt Service	-	-	-	-	-	-	-	-	-	-	-	-	$110,000,000	$119,000,000
Terminal Net Costs	**$14,305,182**	**$15,293,522**	**$18,385,929**	**$22,134,302**	**$22,890,620**	**$23,737,970**	**$60,851,321**	**$61,514,449**	**$61,987,582**	**$62,708,731**	**$63,460,908**	**$64,245,543**	**$926,083,930**	**$937,734,866**
Total Terminal Rentable Space	116,271												-	-
Signatory Terminal Rental Rate	$123.03	$131.53	$158.13	$190.37	$196.87	$204.16	$523.36	$529.06	$533.13	$539.33	$545.80	$552.55	$1,592.97	$1,613.02
Non-Signatory Terminal Rental Rate	$153.79	$164.42	$197.66	$237.96	$246.09	$255.20	$654.20	$661.33	$666.41	$674.17	$682.25	$690.69	$1,991.22	$2,016.27
Signatory Terminal Rental Revenue	$7,786,706	$8,324,687	$10,007,969	$12,048,312	$12,459,997	$12,921,233	$33,123,055	$33,484,014	$33,741,553	$34,134,095	$34,543,526	$34,970,625	$504,093,072	$510,434,999
Non-Signatory Terminal Rental Revenue	$523,426	$559,590	$672,741	$809,893	$837,567	$868,572	$2,226,548	$2,250,812	$2,268,124	$2,294,511	$2,322,033	$2,350,743	$33,885,383	$34,311,691
Total Terminal Rental Revenue	**$8,310,132**	**$8,884,276**	**$10,680,710**	**$12,858,206**	**$13,297,564**	**$13,789,805**	**$35,349,603**	**$35,734,826**	**$36,009,677**	**$36,428,606**	**$36,865,559**	**$37,321,367**	**$537,978,456**	**$544,746,690**

Sources: *PSP International Airport, Mead & Hunt, Unison Consulting, Compiled by Unison Consulting.*

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Table 8-16: Calculation of Projected Loading Bridge Fees (For Fiscal Years 2024 to 2035)

	Budget	Projected											Total	
	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036 - 2040	2041 - 2045
O&M Expenses	$1,187,685	$1,121,069	$1,177,122	$1,235,978	$1,284,605	$1,335,361	$1,388,854	$1,444,704	$1,503,020	$1,563,918	$1,627,518	$1,693,949	$9,574,924	$11,744,801
O&M Reserve	-	($66,616)	$56,053	$58,856	$48,627	$50,755	$53,494	$55,850	$58,316	$60,898	$63,601	$66,430	$379,488	$473,189
Debt Service	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Debt Service Coverage	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other Debt	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Capital Expenditures	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Capital Outlay	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Costs	**$1,187,685**	**$1,054,453**	**$1,233,176**	**$1,294,835**	**$1,333,232**	**$1,386,116**	**$1,442,348**	**$1,500,554**	**$1,561,336**	**$1,624,815**	**$1,691,119**	**$1,760,379**	**$9,954,413**	**$12,217,990**
Less:														
Credits	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Net Requirement	**$1,187,685**	**$1,054,453**	**$1,233,176**	**$1,294,835**	**$1,333,232**	**$1,386,116**	**$1,442,348**	**$1,500,554**	**$1,561,336**	**$1,624,815**	**$1,691,119**	**$1,760,379**	**$9,954,413**	**$12,217,990**
Total Loading Bridges	8													
Loading Bridge Fee	$148,461	$131,807	$154,147	$161,854	$166,654	$173,264	$180,293	$187,569	$195,167	$203,102	$211,390	$220,047	$1,244,302	$1,527,249
Signatory Loading Bridge Fee	$101.69	$90.28	$105.58	$110.86	$114.15	$118.67	$123.49	$128.47	$133.68	$139.11	$144.79	$150.72	$170.45	$209.21
Non-Signatory Loading Bridge Fee	$127.11	$112.85	$131.98	$138.57	$142.68	$148.34	$154.36	$160.59	$167.10	$173.89	$180.98	$188.40	$213.07	$261.52

Sources: *PSP International Airport, Mead & Hunt, Unison Consulting, Compiled by Unison Consulting.*

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Table 8-17: Calculation of Projected BHS Fees (For Fiscal Years 2024 to 2035)

	Budget	Projected											Total	
	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036 - 2040	2041 - 2045
O&M Expenses	$897,000	$941,850	$988,943	$1,038,390	$1,062,273	$1,086,705	$1,112,786	$1,139,493	$1,166,840	$1,194,845	$1,223,521	$1,252,885	$6,730,161	$7,577,488
O&M Reserve	-	$44,850	$47,093	$49,447	$23,883	$24,432	$26,081	$26,707	$27,348	$28,004	$28,676	$29,365	$157,738	$177,597
Debt Service	-	-	$2,272,164	$2,272,164	$2,272,164	$3,746,414	$3,746,414	$3,746,414	$3,746,414	$3,746,414	$3,746,414	$3,746,414	$18,732,071	$18,732,071
Debt Service Coverage	-	-	$568,041	$568,041	$568,041	$936,604	$936,604	$936,604	$936,604	$936,604	$936,604	$936,604	$4,683,018	$4,683,018
Other Debt	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Capital Expenditures	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Capital Outlay	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Requirement	**$897,000**	**$986,700**	**$3,876,239**	**$3,928,041**	**$3,926,360**	**$5,794,155**	**$5,821,884**	**$5,849,217**	**$5,877,206**	**$5,905,866**	**$5,935,215**	**$5,965,268**	**$30,302,988**	**$31,170,174**
Total Signatory Enplaned Passengers	1,591,778	1,657,903	1,724,698	1,785,196	1,846,757	1,903,928	1,957,337	2,010,416	2,065,646	2,125,377	2,188,051	2,251,554	12,230,084	13,940,055
Total Non-Signatory Enplaned Passengers	94,363	98,283	102,243	105,829	109,479	112,868	116,034	119,181	122,455	125,996	129,711	133,476	725,019	826,389
Total Enplaned Passengers	**1,686,142**	**1,756,186**	**1,826,941**	**1,891,025**	**1,956,235**	**2,016,796**	**2,073,371**	**2,129,597**	**2,188,101**	**2,251,372**	**2,317,763**	**2,385,030**	**12,955,103**	**14,766,443**
BHS Fee Per Total Enplaned Passengers	$0.53	$0.56	$2.12	$2.08	$2.01	$2.87	$2.81	$2.75	$2.69	$2.62	$2.56	$2.50	$2.34	$2.11
Non-Signatory BHS Fee Revenue	$62,750	$69,025	$271,162	$274,786	$274,668	$405,330	$407,270	$409,182	$411,140	$413,145	$415,198	$417,300	$2,119,844	$2,180,508
Net Signatory BHS Fee Revenue Requirement	$834,250	$917,675	$3,605,077	$3,653,255	$3,651,692	$5,388,825	$5,414,615	$5,440,035	$5,466,066	$5,492,722	$5,520,017	$5,547,968	$28,183,144	$28,989,666
Total BHS Fee Revenue	**$897,000**	**$986,700**	**$3,876,239**	**$3,928,041**	**$3,926,360**	**$5,794,155**	**$5,821,884**	**$5,849,217**	**$5,877,206**	**$5,905,866**	**$5,935,215**	**$5,965,268**	**$30,302,988**	**$31,170,174**

Sources: *PSP International Airport, Mead & Hunt, Unison Consulting, Compiled by Unison Consulting.*

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Table 8-18: Calculation of Projected Aircraft Gate Fees (For Fiscal Years 2024 to 2035)

	Budget	Projected											Total	
	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036 - 2040	2041 - 2045
Holdroom (Bono)														
Average Space Per Holdroom (sq. ft.)	1,948												9,740	
Terminal Rental Rate	$123.03	$131.53	$158.13	$190.37	$196.87	$204.16	$523.36	$529.06	$533.13	$539.33	$545.80	$552.55	$1,592.97	$1,613.02
Average Cost Per Holdroom	**$239,668**	**$256,227**	**$308,037**	**$370,837**	**$383,509**	**$397,705**	**$1,019,501**	**$1,030,611**	**$1,038,538**	**$1,050,620**	**$1,063,222**	**$1,076,367**	**$15,515,576**	**$15,710,775**
Signatory Per Use Fee - Aircraft Gate	$249.77	$261.11	$296.60	$339.61	$348.29	$358.02	$783.90	$791.51	$796.94	$805.22	$813.85	$822.85	$2,211.04	$2,237.78
Non-Signatory Per Use Fee - Aircraft Gate	$312.22	$326.39	$370.75	$424.52	$435.37	$447.52	$979.88	$989.39	$996.18	$1,006.52	$1,017.31	$1,028.57	$2,763.80	$2,797.22
Total Per Use Fee - Aircraft Gate Revenue	**$3,082,855**	**$3,287,296**	**$3,808,732**	**$4,448,305**	**$4,915,784**	**$5,184,378**	**$11,604,330**	**$11,988,121**	**$12,370,493**	**$12,834,571**	**$13,349,407**	**$13,886,400**	**$202,630,724**	**$233,396,659**
Holdroom (Agua Caliente)														
Average Space Per Holdroom (sq. ft.)	1,831												9,153	
Terminal Rental Rate	$123.03	$131.53	$158.13	$190.37	$196.87	$204.16	$523.36	$529.06	$533.13	$539.33	$545.80	$552.55	$1,592.97	$1,613.02
Average Cost Per Holdroom	**$225,212**	**$240,772**	**$289,457**	**$348,469**	**$360,376**	**$373,716**	**$958,006**	**$968,446**	**$975,895**	**$987,248**	**$999,090**	**$1,011,443**	**$14,579,703**	**$14,763,128**
Signatory Per Use Fee - Aircraft Gate	$239.87	$250.53	$283.87	$324.29	$332.45	$341.59	$741.79	$748.94	$754.04	$761.81	$769.92	$778.39	$2,082.84	$2,107.96
Non-Signatory Per Use Fee - Aircraft Gate	$299.84	$313.16	$354.84	$405.37	$415.56	$426.98	$927.23	$936.17	$942.55	$952.27	$962.41	$972.98	$2,603.55	$2,634.95
Total Per Use Fee - Aircraft Gate Revenue	**$1,295,889**	**$1,380,534**	**$1,595,572**	**$1,859,211**	**$1,636,545**	**$1,725,236**	**$3,829,923**	**$3,956,326**	**$4,082,324**	**$4,235,174**	**$4,404,744**	**$4,581,593**	**$66,576,208**	**$76,682,419**
Total Per Use Fee - Aircraft Gate Revenue	**$4,378,744**	**$4,667,830**	**$5,404,304**	**$6,307,516**	**$6,552,329**	**$6,909,614**	**$15,434,252**	**$15,944,447**	**$16,452,818**	**$17,069,746**	**$17,754,152**	**$18,467,993**	**$269,206,932**	**$310,079,077**

Sources: *PSP International Airport, Mead & Hunt, Unison Consulting, Compiled by Unison Consulting.*

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Concessions Fees

Concession Fees include Airfield Concessions and Terminal Concessions. Airfield Concessions are fees that are primarily generated from third-party service vendors providing services to Airlines and general aviation. These services include but are not limited to fixed based operator service, fuel flowage fees, aircraft parking, and flight kitchens. Terminal Concessions are rental and permit fees for passenger facing services provided at the airport, primarily within the Terminal. These fees include food, beverage, retail, and advertising. Concessions Fees grew from $3.3 million in FY2019 to $4.1 million in FY2023, representing a compound annual growth rate of 4.4 percent over the same period. Refer to **Table 8-12** for details regarding the historical performance of Concessions Fees.

Concession Fees are expected to increase from $3.5 million in FY2024 to $4.9 million in FY2035, representing a compound annual growth rate of 2.9 percent over the same period. Airfield Concession Fees are expected to increase from $2.4 million in FY2024 to $3.3 million in FY2035, representing a compound annual growth rate of 2.7 percent over the same period. Terminal Concession Fees are expected to increase from $1.0 million in FY2024 to $1.6 million in FY2035, representing a compound annual growth rate of 3.4 percent over the same period. The growth in Airfield Concessions Fees is primarily driven by inflation and operations growth over the forecast period. The growth in Terminal Concessions Fees is driven by inflation and passenger growth, as well increases in the expected spend per enplanements through space optimization as a result of the Terminal Redevelopment included in the MP CIP. Refer to

Table 8-13 for details of the revenues generated from Concessions Fees over the forecast period.

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Ground Transportation Fees

Ground Transportation Fees include Parking, Rental Car Revenues, and other Ground Transportation Fees. The fees generally relate to passengers accessing the Airport through some form of vehicular transportation. Ground Transportation Fees grew from $12.2 million in FY2019 to $29.0 million in FY2023, representing a compound annual growth rate of 18.9 percent over the same period. Refer to **Table 8-12** for details regarding the historical performance of Ground Transportation Fees. Ground Transportation Fees are expected to increase from $15.2 million in FY2024 to $26.1 million in FY2035, representing a compound annual growth rate of 4.6 percent over the same period. Refer to

Table 8-13 for details of the revenues generated from Ground Transportation Fees over the forecast period.

Public Parking

Public Parking Fees grew from $3.8 million in FY2019 to $6.2 million in FY2023, representing a compound annual growth rate of 10.1 percent over the same period. Parking Fees comprised 21.5 percent of Total Ground Transportation Fee Revenues and 13.3 percent of Operating Revenues in FY2023.

Public Parking Fees are expected to increase from $4.9 million in FY2024 to $8.6 million in FY2035, representing a compound annual growth rate of 4.8 percent over the same period. Parking revenues are primarily generated through passengers parking at the airport, with small ancillary revenues streams related to employee parking, and violations. The increase in parking revenues is driven by the increase in passenger traffic over the forecast period in addition rate increases occurring every 5 years beginning in 2030. The rate increases are determined by the cumulative impact of inflation over the previous 5 years.

Rental Car Revenue

Rental Car Revenue grew from $7.7 million in FY2019 to $21.5 million in FY2023, representing a compound annual growth rate of 46.1 percent over the same period. Rental Car Revenue comprised 74.0 percent of Total Ground Transportation Fee Revenues and 46.1 percent of Operating Revenues in FY2023.

Rental Car Revenues are expected to increase from $9.6 million in FY2024 to $16.2 million in FY2035, representing a compound annual growth rate of 4.5 percent over the same period. On-Airport Rental Car Revenues represent over 99.6 percent of all Rental Car Revenues are primarily generated through rental fees from car rental companies generally calculated as the greater of 10% of sales or the minimum annual guarantee (MAG). The increase in parking revenues is driven by the increase in passenger traffic over the forecast period.

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Ground Transportation Fees

Ground Transportation fees include fees received from taxis, limos, and shuttles that are permitted to service passengers at the Airport. Ground Transportation fees grew from $735.6 thousand in FY2019 to $1.3 million in FY2023, representing a compound annual growth rate of 12.3 percent over the same period. Ground Transportation Fees comprised 4.5 percent of Total Ground Transportation Fee Revenues and 2.8 percent of Operating Revenues in FY2023.

Ground Transportation Fees are expected to increase from $726.7 thousand in FY2024 to $1.3 million in FY2035, representing a compound annual growth rate of 4.7 percent over the same period. Ground Transportation Fees are primarily generated through per trip fees charged to taxis and other on-demand transportation services at the airport. The increase in Ground Transportation Fees is driven by the increase in passenger traffic over the forecast period in addition rate increases occurring every 5 years beginning in 2030. The rate increases are determined by the cumulative impact of inflation over the previous 5 years.

Other Fees

Other Fees include Non-Airline Rental Revenue and Miscellaneous Revenues. Non-Airlines Rental Revenues are fees that are primarily generated through rentals from non-aeronautical tenants primarily within the Terminal. Other Fees grew from $2.8 million in FY2019 to $3.9 million in FY2023, representing a compound annual growth rate of 7.0 percent over the same period. Refer to **Table 8-12** for details regarding the historical performance of Other Fees.

Other Fees are expected to increase from $2.9 million in FY2024 to $3.8 million in FY2035, representing a compound annual growth rate of 2.3 percent over the same period. Non-Airlines Rental Revenues are expected to increase from $2.1 million in FY2024 to $2.7 million in FY2035, representing a compound annual growth rate of 2.3 percent over the same period. Miscellaneous Revenues are expected to increase from $819.1 thousand in FY2024 to $1.1 million in FY2035, representing a compound annual growth rate of 2.4 percent over the same period. The growth in Other Fees is driven primarily by rent increases through inflation. Refer to

Table 8-13 for details of the revenues generated from Other Fees over the forecast period.

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PROJECT DEBT SERVICE COVERAGE

PSP currently has one series of outstanding debt, the 2019 Bonds. The 2019 Bonds are secured under the Indenture, dated as of July 1, 2019, by and between the City and the Trustee and are special obligations of the City, payable from and secured by a pledge of and first lien on PFC Revenues. The 2019 Bonds are not secured by, and the Owners of 2019 Bonds have no security interest in or mortgage on, the property of the Airport or of the City, and the 2019 Bonds are not secured by a pledge of revenues other than the pledge of PFC Revenues. The City may issue additional obligations payable from PFC Revenues on a parity basis with the 2019 Bonds (Parity Debt). The City may issue additional debt, secured by a pledge of PFC revenues, with certain restrictions contained in the Indenture. One of those restrictions requires PFC Revenues for the most recent 12-month period are at least equal to 1.75 times the annual debt service on the Outstanding 2019 Bonds and Parity Debt, including the Parity Debt being issued.[7]

It is assumed that GARBs will require a minimum debt service coverage of ratio 1.25 times the debt service in each year.

Table 8-19 presents the projected debt service coverage calculation throughout the planning horizon. Debt service coverage is projected to remain at or above 1.25 times debt service through FY2035, thereby meeting or exceeding both the Rates and Charges Covenant and the Additional Bonds Test specified in the Indenture.

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[7] Obtained from the 2019 Airport Passenger Facility Charge Revenue Bonds Official Statement

COST PER ENPLANEMENT

Table 8-20 presents the Airline cost per enplanement (CPE). In general, the CPE is projected to increase in future years due to the projected increases in the annual debt service requirements allocated to the airline cost centers for the new facilities recommended in the MP. Also contributing to the increases in the CPE are projected increases in O&M expenses. The FY2024 CPE is budgeted to be $12.38. The CPE ranges from $12.20 in FY2025 to $34.53 in FY2035.

The average CPE for small hub airports was $6.55 in 2023, according to data compiled by the FAA through their Certification Activity Tracking System (CATS) Form 127, with four small hub airports reporting a 2023 CPE that exceeds PSP's FY2024 CPE. It is important to note that several small-hub airports are planning terminal renovations and expansions, which will most likely increase the average CPE for small-hub airports. In addition, the CPE at peer airports will increase over time as a result of increasing wages, expenses, and other inflationary factors.

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Table 8-19: Projected Debt Service Coverage

	Budget	Projected										
	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Total Revenues	**$43,126,974**	**$44,902,286**	**$52,425,802**	**$56,438,816**	**$58,931,447**	**$66,633,507**	**$98,966,847**	**$101,907,110**	**$110,391,078**	**$113,164,205**	**$115,995,955**	**$120,069,354**
O&M Expenses	$40,198,444	$40,695,603	$42,268,098	$43,910,513	$45,564,024	$47,287,744	$49,105,905	$51,001,866	$52,979,200	$55,041,654	$57,193,156	$59,437,818
Net Revenues	$2,928,530	$4,206,683	$10,157,704	$12,528,303	$13,367,423	$19,345,763	$49,860,942	$50,905,245	$57,411,879	$58,122,551	$58,802,799	$60,631,536
PFCs Applied to Debt Service	$2,497,000	$2,497,500	$6,170,353	$6,167,103	$6,169,353	$8,588,613	$8,590,863	$8,592,613	$6,093,613	$6,093,613	$6,093,613	$6,093,613
Airport Funds Applied to Debt Service	-	-	-	-	-	-	-	-	-	-	-	-
Total Revenues Available for Coverage	**$5,425,530**	**$6,704,183**	**$16,328,057**	**$18,695,406**	**$19,536,776**	**$27,934,376**	**$58,451,805**	**$59,497,858**	**$63,505,492**	**$64,216,164**	**$64,896,412**	**$66,725,149**
Debt Service	**$2,497,000**	**$2,497,500**	**$6,170,353**	**$6,167,103**	**$6,169,353**	**$9,892,773**	**$38,992,077**	**$38,993,827**	**$47,610,818**	**$47,610,818**	**$47,610,818**	**$47,610,818**
Total Operating Revenues	**2.17**	**2.68**	**2.65**	**3.03**	**3.17**	**2.82**	**1.50**	**1.53**	**1.33**	**1.35**	**1.36**	**1.40**

Sources: *PSP International Airport, Mead & Hunt, Unison Consulting, Compiled by Unison Consulting.*

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Table 8-20: Projected Cost per Enplaned Passenger

	Budget	Projected										
	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Airfield Landing Fees	$6,716,963	$6,933,610	$8,105,961	$8,163,656	$8,747,954	$12,671,855	$13,037,784	$13,943,195	$20,447,643	$20,901,797	$21,257,208	$21,700,672
Terminal Rents	$8,310,132	$8,884,276	$10,680,710	$12,858,206	$13,297,564	$13,789,805	$35,349,603	$35,734,826	$36,009,677	$36,428,606	$36,865,559	$37,321,367
Loading Bridges	$1,187,685	$1,054,453	$1,233,176	$1,294,835	$1,333,232	$1,386,116	$1,442,348	$1,500,554	$1,561,336	$1,624,815	$1,691,119	$1,760,379
Baggage Handling System Fees	$897,000	$986,700	$3,876,239	$3,928,041	$3,926,360	$5,794,155	$5,821,884	$5,849,217	$5,877,206	$5,905,866	$5,935,215	$5,965,268
Joint Use Space Charge	-	-	-	-	-	-	-	-	-	-	-	-
Aircraft Gate Fees	$4,378,744	$4,667,830	$5,404,304	$6,307,516	$6,552,329	$6,909,614	$15,434,252	$15,944,447	$16,452,818	$17,069,746	$17,754,152	$18,467,993
Per Use Fee - Ticket Counter	-	-	-	-	-	-	-	-	-	-	-	-
Revenue Share	($610,421)	($1,100,937)	($3,079,272)	($2,489,995)	($2,645,157)	($3,783,413)	($4,198,181)	($4,453,509)	($1,484,699)	($1,794,281)	($2,172,149)	($2,863,607)
Total Airline Revenue	**$20,880,103**	**$21,425,933**	**$26,221,118**	**$30,062,259**	**$31,212,283**	**$36,768,131**	**$66,887,691**	**$68,518,730**	**$78,863,981**	**$80,136,549**	**$81,331,103**	**$82,352,071**
Enplanements	**1,686,142**	**1,756,186**	**1,826,941**	**1,891,025**	**1,956,235**	**2,016,796**	**2,073,371**	**2,129,597**	**2,188,101**	**2,251,372**	**2,317,763**	**2,385,030**
Cost Per Enplanement	**$12.38**	**$12.20**	**$14.35**	**$15.90**	**$15.96**	**$18.23**	**$32.26**	**$32.17**	**$36.04**	**$35.59**	**$35.09**	**$34.53**
Cost Per Enplanement (2024 $)	$12.38	$11.62	$13.02	$13.73	$13.13	$14.28	$24.07	$22.87	$24.39	$22.94	$21.54	$20.19

Sources: *PSP International Airport, Mead & Hunt, Unison Consulting, Compiled by Unison Consulting.*

CONCLUSION

The following points highlight the financial feasibility of implementing the MP CIP projects:

- The funding plan assumes the use of AIP grants, BIL grants, and PFCs, when available, to reduce the financial impacts MP CIP
- PFCs have limited capacity to fund MP CIP projects as an average of 35.6 percent of annual PFC revenue is pledged to existing debt service through 2031
- Debt service coverage is projected to exceed the anticipated 1.25 times debt service requirement through FY2035
- The airline CPE is projected to remain reasonable, below $37 (under $25 in 2024 dollars) through 2035 which is similar to other small and medium-hub airports embarking on large redevelopment programs

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